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Clinical Remarks ON INTRACTABLE CONSTIPATION TREATED BY OPERATION.

Founded on a paper read before the Surgical Section of the Royal Society of Medicine on June 11th, 1912,

BY P. LOCKHART MUMMERY, F.R.C.S. ENG.,

SURGEON, ST. MARK'S HOSPITAL FOR CANCER, FISTULA, AND OTHER DISEASES OF THE RECTUM; SURGEON, QUEEN'S HOSPITAL FOR CHILDREN.

MR. PRESIDENT AND GENTLEMEN,—Constipation of a more or less serious character is a very common condition, probably one of the commonest for which patients consult their medical advisers. The surgeon is only called in for cases where the condition has reached an extreme degree, and then only as a rule after the patient has been under medical treatment for years. It is only after all the ordinary, and often extraordinary, methods of treatment have failed that the aid of surgery is invoked.

As it is not a disease, constipation can have no distinctive pathology; we can, however, recognise three distinct types: (1) obstructive constipation, in which some definite obstruction exists to the passage of fæcal material along the colon; (2) atonic constipation, in which the peristaltic and expulsive power of the colon is deficient; (3) undue solidity of the fæcal material interfering with its passage along the colon.

Undue retention of fæcal material within the body is not itself of importance. It is rather the results of this retention which cause trouble, and to prevent which surgical treatment is sometimes called for.

Of the extremely poisonous nature of the toxins which are produced in the bowel as the result of the retention of fæcal material in the colon we have good evidence in cases of intestinal obstruction. In cases of acute intestinal obstruction the cause of death is almost without exception a profound toxæmia, rather than any direct result of the obstruction. Clairmont and Ranzi found by experiment that while the filtrate from the contents of the normal intestine produced no harmful effects when injected into animals, a similar filtrate prepared from the contents of a loop of strangulated bowel produced serious, and often fatal, results when injected.

The toxæmia in chronic constipation is never so serious as in cases of intestinal obstruction because the poisoning occurs more slowly, and the bowel wall being undamaged absorption also occurs more slowly. In time, however, the constant slow poisoning which results from chronic fæcal accumulation causes very serious symptoms. One of the most marked of these is a progressive loss of weight. The patient loses most of the natural fat, with the result that the skin becomes loose, and the abdominal organs, which are largely dependent upon their surrounding fat for the maintenance of their positions, become loose, and a marked degree of visceroptosis results, which still further aggravates the original condition. Discolouration of the skin is another characteristic symptom in bad cases. Usually the skin becomes a dull earthy colour, while in a few cases I have seen large patches of brown discolouration which caused considerable disfigurement. Other symptoms, such as headache, neuralgia, sleeplessness, loss of appetite, and general lack of vitality are too well known to warrant further mention. Not infrequently the most serious aspect of the case is the mental depression which accompanies the toxæmia. I have known patients who threatened to commit suicide, and doubtless everyone has met with similar cases.

I do not propose to embark here on the various theories respecting the mechanism causing many of these cases of constipation. There has, I think, been too much theorising and too little practical pathology. Nor do I propose to discuss the question of theoretical kinks which can be demonstrated by X rays. I shall confine my remarks almost entirely to those cases which have come directly under my own observation, and in which the actual lesion causing obstruction of the bowel was demonstrated. It is only by careful study of the cases in which a definite lesion is demonstrable that we can arrive at the truth.

The cases of severe constipation which are brought to the surgeon may be conveniently divided into two classes. Cases of obstructive constipation form the majority of them, and the minority is made up of cases of atonic constipation. I propose to deal with these in detail, illustrating my remarks from cases which have been under my care, of which I have made a tabulated list.

CASES OF OBSTRUCTIVE CONSTIPATION.

These form the majority of the cases brought to the surgeon and are those which in most instances can only be treated successfully by surgical operation. Operations which are performed for chronic constipation without reference to the underlying pathological cause cannot be considered as satisfactory or scientific procedures, and our greatest difficulty is to be able to make a correct diagnosis or even working hypothesis as to the cause of the fæcal delay. The diagnosis is often made possible by a sigmoidoscopic examination after the bowel has been well emptied by enemata, and I have found this by far the most valuable aid to diagnosis in these cases.

The presence of adhesions involving the pelvic colon and causing a kink is readily diagnosed by means of the sigmoidoscope. I have frequently been able in this way to state that the sigmoid was bound down into the iliac fossa by adhesions, and this diagnosis having been in many cases completely confirmed by a subsequent laparotomy, I have gained considerable confidence in diagnosing adhesions in this manner.

X ray photographs after a bismuth meal, or after large enemata of bismuth emulsion, will sometimes afford valuable information, but I think we should accept the evidence of these photographs, like all X ray evidence, with caution. They are of value as confirmatory evidence, but a diagnosis should, in my opinion, never be founded upon X ray photographs alone, and I have very little faith in the diagnosis of kinks from X ray appearances when there is not sigmoidoscopic or other evidence to confirm the diagnosis. They are particularly useful in showing strictures such as those seen in pericolitis and in cases of ptosis of the transverse colon.

It is obvious that there must normally be a very large number of kinks in the alimentary canal, or it would be impossible to pack nearly 40 feet of it into the abdominal cavity. A kink in the bowel is of absolutely no importance as long as the bowel retains a reasonable amount of mobility, the kinks straightening out as the contents pass along. A kink can only produce partial obstruction when, owing to adhesions or some other cause, the bowel is so fixed that the kink cannot be straightened out.

It is obvious that by the X rays it is quite impossible to tell the difference between a normal kink and one due to adhesions. The so-called iliac kink, about which we have recently heard a good deal, is, I think, open to grave suspicion as a pathological cause of constipation. Food naturally accumulates in the terminal coils of the small bowel lying in the pelvis, and there must be a kink in the ileum where it joins the more fixed cæcum. The X ray appearances show a considerable amount of food in the terminal portion of the ileum, and a kink between this portion and the cæcum. I see nothing, however, to oppose the view that this a normal state.

I also think that observations upon the rate of passage of a bismuth meal should be accepted with great caution as proving anything. There can be no question that observations of this nature made by Dr. A. F. Hertz and others have been of great value in acquainting us with the normal manner in which the food passes through the alimentary canal. But when it is attempted to prove constipation by this method it is advisable to be very cautious. In the first place, bismuth in large doses is one of the best known drugs for producing constipation, or, in other words, for stopping diarrhœa. Again, bismuth, like other drugs, varies greatly in its effect upon different individuals, and thereby a serious error is brought into the investigation. Moreover, it is not correct to argue that because delay occurs in the passage of the test meal along the ascending colon that the delay is just in front of it. It would be as correct to argue that the cause of a train being late in leaving Victoria Station was an obstruction just outside the station, when it is just as likely to be a breakdown at the Brighton end of the line.

CAUSES OF OBSTRUCTIVE CONSTIPATION.

Adhesions.—This was one of the commonest causes in my series, being present in eight out of the total. Adhesions

usually cause chronic obstruction by producing a kink in the bowel which interferes with the passage of anything but fluid fæces along its lumen.

Cases due to adhesions are generally characterised by well-localised pain in the abdomen, which is especially noticed at the time when peristalsis is active—that is to say, two or three hours after a meal and before the bowels act. The pain, in a few cases, is very severe, and is then probably the result of enterospasm in the section of bowel just above the kink.

The cause of these adhesions is often very obscure. We know that in some patients adhesions form readily and persist for years, even increasing apparently in length and toughness. In other patients, however, adhesions known to be present rapidly disappear and, as far as one can tell, leave no trace behind.

Some of the cases, in which adhesions have occurred after apparently aseptic operations upon the abdomen, are probably due to blood clot left in the abdomen. In this connexion I might quote von Baisch's experiments upon animals.[1] He performed two series of experiments, in both of which similar lesions were produced. In one series complete hæmostasis was secured, and in the other varying quantities of blood were allowed to remain in the abdomen. In the first series he found subsequently that no adhesions had developed, while in the second they were constantly present.

Operative treatment is the only thing which offers any probability of permanent cure in those cases of partial obstruction due to adhesions. In the past there have been many instances in which the adhesions, after division, have promptly recurred, and the patient has only been given very temporary relief. So much has this been the case that some surgeons have expressed the opinion that it is useless to operate, as the patient may be made worse instead of better; while other surgeons have tried using thin sheets of gold, painting the surfaces with gum, glucose, or other substances to prevent the re-formation of adhesions.

Nevertheless, most excellent and permanent results can be obtained by operation; but two factors are, in my opinion, absolutely necessary to a successful result. All raw surfaces left by division of the adhesions must be completely covered so as to leave no raw surface uncovered by peritoneum, and the most absolute asepticity and hæmostasis are a *sine quâ non*. Further, great care must be taken to prevent any, even the most superficial, damage to the peritoneum.

If the adhesions are divided carefully, while the necessity for closing in the raw surface is born in mind, it is generally possible to close in the exposed area by stitching up the gap in the opposite direction. If not, a little freeing of the peritoneum by blunt dissection, or by the formation of peritoneal flaps, will enable it to be done quite easily. I usually do the stitching with fine, round-bodied needles, preferably straight, using a continuous mattress stitch and being careful to bury the knots and to leave the line of incision so that no thread can be seen anywhere. At first I used fine catgut, but I have now discarded this in favour of sewing-cotton. I always take care to prevent the thread touching the skin, or, in fact, anything but the peritoneum, during the process of sewing, and I use sterilised batiste clipped to the edges of the wound in the abdominal wall. The first knot should be tied on the under side of the peritoneum so that it will lie outside the peritoneal cavity. The finishing knot can be tucked in behind the line of suture, and, if fine cotton thread is used, these knots are very small. Antiseptics should not be used in such a way that any chemical solution can come into contact with the peritoneum. I prefer to have the instruments on a dry towel and to use dry swabs wrung out of normal salt solution. I always wear rubber gloves and avoid handling the parts more than is absolutely necessary.

When the adhesions are extensive it is, of course, impossible to close in all the raw surface, and such cases are, as a rule, very unsatisfactory to treat. The worst bands can, however, sometimes be treated in this way with considerable relief to the patient. I have obtained the best results in those cases where a single band of adhesions existed. The presence of extensive adhesions in the peritoneal cavity generally renders it impossible to obtain a perfect result. Often the best procedure will be to short-circuit the coil of intestine which is most involved, so as to provide another and less obstructed path for the fæcal contents.

Some of my best results have been in cases of adhesions, and as most of them have been private cases I have been able to check the results. In most of them the condition of the patient is known from one to three years after the operation. In five cases the result was all that could be desired a year or more after the operation, the patients describing themselves as cured. In two cases the results were very good, the patients being no longer invalided and the bowels acting regularly without trouble; but the patients still complained of minor symptoms, possibly due to adhesions. Both these patients were neurotic. In one case the result was unsatisfactory; this was a case of extensive adhesions and appendicostomy was performed.

The essential factors which make for success in operations for localised adhesions are, I believe: 1. Perfect asepsis. 2. Doing the operation bloodlessly, and particularly leaving no blood in the peritoneal cavity. 3. Covering in all raw surfaces and stumps by careful suturing, and, where necessary, by plastic operations on the peritoneum. 4. Gentle handling of the peritoneum.

Stricture.—There were seven cases of stricture in my series, and in all of them the stricture was due to pericolitis. In 5 the pericolitis was the ordinary simple form due to diverticula of the colon, and in 2 it was tubercular in origin.

In the cases due to pericolitis the patients' ages were 62, 53, 46, 53, and 45, and the stricture was in the sigmoid flexure. In all it was a long tubular stricture and caused increasing constipation, in several cases dating back for some years, with occasional pain. A palpable tumour was detectable in all on careful examination. Two of the cases were thought to be malignant in character, but subsequently proved to be simple pericolitis. In the other 5 the diagnosis was correctly made. This condition is of particular interest in that it is often mistaken for inoperable malignant disease and accounts, I believe, for many of the cases of supposed cancer of the bowel which recover after colotomy.

There were 2 cases of hyperplastic tuberculosis. One was a lady, aged 26, in whom the sigmoid was affected,[2] and the other a child, aged 7, in whom the cæcal angle was affected.

In three cases the stricture was successfully resected—in two cases by myself, and in one by another surgeon. In one case colotomy was performed, in two the stricture was short-circuited, and in one no operation was done. All of these seven patients are at the present time in good health.

Foreign body.—There was one case of foreign body. This was a particularly interesting case. The patient had suffered for about a year from increasing difficulty with the bowels, and an examination revealed a hard tumour, of about the size and consistency of a fives ball, in the pelvic colon. I supposed this to be a malignant growth, but on opening the abdomen found it was a foreign body. It was removed from the colon through an incision, and proved to be a fæcal concretion largely composed of hair. The patient got quite well.

Congenital dilatation.—There was one case of congenital dilatation of the colon, in a patient aged 23. He had suffered most severely from chronic constipation all his life, and an examination revealed the fact that his pelvic colon was 9 inches in diameter and occupied two-thirds of his abdominal cavity. It was not deemed justifiable to put the patient to the risk involved in the removal of such an enormous colon, and I performed appendicostomy with the object of enabling him more readily to prevent accumulation in the dilated sac. This was nearly three years ago, and he has been able since to avoid any serious trouble with his bowels, though I have not recently had the opportunity of examining him, and consequently do not know if there has been any diminution in the size of the dilated colon.

Kinks or volvulus.—There are two of these cases in my series. One was a young man, aged 29, and the other a lady, aged 40. In both there was a very long mesentery to the pelvic colon, and this portion of the bowel normally assumed a position in which it was half twisted and fæces only passed with the greatest difficulty. Ordinary aperients

[1] Beiträge zur Geburtsch., ix., p. 435.

[2] This case has already been reported to the Clinical Section of this society, Royal Society of Medicine Transactions, vol. iii., Clinical Section, p. 201, 1910.

were quite useless, and the patients were only able to get relief with large enemata, which had frequently to be repeated. In both cases the history of severe constipation dated back to infancy, and it seemed probable that the condition was congenital.

In both cases I shortened the meso-sigmoid by rows of Lembert stitches, inserted on the outer side, in order to make it impossible for the volvulus to recur. In neither case was the result entirely satisfactory. There was complete relief for some time in both cases, but after some months the old symptoms partly recurred, and I believe the mesentery again lengthened and allowed the volvulus to re-form. In another case of the same sort I should resect the sigmoid and perform an end-to-end anastomosis, so as to prevent any possibility of a recurrence of the volvulus.

Visceroptosis and atony of the bowel.—Of all the cases in my series these were by far the least satisfactory. There were 8 of them altogether, and the patients, with one exception, were all women, most of them of a highly neurotic type, between the ages of 30 and 45. The symptoms in all were very severe. There was a serious degree of auto-intoxication, almost complete invalidism; the bowels refused to act except as the result of most drastic measures, and the patients had tried almost every imaginable treatment short of operation. Both the patients themselves and their medical attendants were very anxious that something should be done. Curiously enough there was no marked weakness of the abdominal wall in most of the cases, while in several the abdominal muscles were quite up to the normal. Certainly in none of my cases could one say that the visceroptosis was secondary to weakness of the abdominal walls.

I do not believe that the serious delay in the passage of the food residue through the colon which occurs in these cases is due to the abnormal position of the colon, or to any increase in the flexures at the hepatic and splenic angles, as has often been suggested, but that it is due to a general loss of tone in the muscular walls of the colon itself. We are at present very much in the dark as to exactly how or why this occurs. One sees women with loose, pendulous abdominal walls, who have marked visceroptosis, and yet have comparatively little difficulty in getting their bowels to act. The wearing of a properly fitting belt as a rule makes these patients quite comfortable and relieves their symptoms. The 8 cases in my list, however, are of quite a different type. They were none of them women who had had children, and there was no marked weakness of the abdominal wall in any of them.

So far as my experience goes there is no surgical treatment which can be depended upon to cure these cases. Appendicostomy, by enabling the bowel to be kept empty, gets rid of the auto-intoxication, which is one of their most serious symptoms, and therefore gives considerable relief, but I cannot say that it entirely cures them, and two of my cases are not able to dispense with the opening after the lapse of three years in one case and one and a half years in the other. I think there is still a great deal to be discovered as to the exact pathology of these curious cases.

Case 8 is of considerable interest, partly because such severe atonic constipation is in my experience very rare in men, and partly because of the excellent results which followed appendicostomy. He was one of the worst cases of auto-intoxication I have seen, and he was thought to be dying. He was extremely emaciated, and his skin was of that peculiar shade that one is accustomed to associate with severe auto-intoxication. At the operation his colon was found to be much dilated and very thin; there appeared to be hardly any muscular tissue in it. After the operation he improved in health in a quite extraordinary manner. The appendicostomy opening was closed 18 months after the operation, and at the present time he is one of the most physically fit looking men of his age that I have seen.

Pressure upon the bowel from outside.—There were only two instances of this in my series. In one, Case 22, the constipation, which at the time I first saw the patient was the only thing complained of, was due to a large papillomatous cyst of the left ovary which pressed upon the pelvic colon, and by its weight prevented the passage of anything but liquid through it. Examination revealed the presence of the tumour, and after its removal the patient's bowels again acted in a normal manner. The patient is now quite well—18 months after the operation.

In the other case (No. 18) there was a rather enlarged and retroflexed uterus which practically blocked the posterior pelvic outlet. The fundus of the uterus could be felt just within the rectum, and acted like a ball valve, almost completely preventing the passage of fæces. Relief could only be obtained by enemata and long tubes which temporarily pushed up the uterine fundus. Similar cases have been described by Dr. Ernest Herman[3] and by Dr. Grace Murray, of New York. In my case anterior fixation of the uterus was attended by the happiest results, and no recurrence of the old symptoms had taken place two years later.

Enterospasm.—In 2 cases the cause of the constipation appeared to be a local spasm of the colon which caused severe pain and symptoms of obstruction. In one case (No. 7) the patient had a chronically inflamed appendix strictured at its base.

The other case (No. 14) was a very remarkable one. The patient had been a more or less complete invalid for ten years. She had been labelled as a hopeless neurotic by several people who had seen her. She had severe constipation, and frequently passed complete mucous casts of the bowel. During many of the attacks the pain was so severe as to necessitate the use of morphia, and on several occasions she was thought to be suffering from acute intestinal obstruction. Eventually I operated and removed 44 gall-stones from her gall-bladder, with the result that she got quite well and has remained so for two years.

I have ventured to bring forward this series of cases because the treatment of chronic bowel obstruction associated with auto-intoxication has lately been the subject of much discussion, and it has seemed to me that anything which will help us to elucidate the real facts in these admittedly difficult cases and to discover the pathological causes which underlie the condition cannot fail to be of value at the present time.

I cannot agree with Mr. Arbuthnot Lane in considering that all these cases possess a common pathology. It seems to me that there are a great number of different causes for this condition. Moreover, while I cannot but admire the brilliant operative results that Mr. Lane has achieved in so formidable an operation as excision of the entire colon, I cannot agree with him in believing that so serious an operation is either necessary or advisable. I think better results can be obtained at less risk by trying to discover the cause of the condition and remedying it directly, where this is possible, and where this is not possible I think appendicostomy, which admittedly should be an operation almost without any mortality, will give results that can compare very favourably with excision of the colon.

LIST OF CASES.

CASE 1.—Patient aged 48. Constipation of many years' standing. She had occasional vomiting and abdominal pain; passed membrane frequently; had lost weight, and was a complete invalid. Several slight attacks of appendicitis. Appendix removed. Extreme degree of visceroptosis found. Not improved.

CASE 2.—Patient aged 26. She had a history of increasing constipation. Bleeding from the bowel, and severe abdominal pain for 7 years. Right-sided colotomy performed 18 months previously. Weight 6 st. 3 lb. Sigmoidoscopic examination revealed a stricture due to pericolitis in the sigmoid. Hyperplastic tubercular stricture removed from middle of sigmoid; resection and end-to-end anastomosis performed. Complete recovery. Patient now weighs 11 st. and is quite well.

CASE 3.—Patient aged 40. She had a history of alternating diarrhœa and constipation for many years. Kink of the sigmoid flexure due to an unduly long mesentery. Meso-rectum shortened by stitching. Considerable improvement followed for a time, but her symptoms partly returned later.

CASE 4.—Patient aged 45. He had very severe attacks of constipation, accompanied by abdominal pain. Passed mucous casts; suffered much from indigestion. Bowels only acted as result of repeated enemata. Adhesions on right side diagnosed. A complicated adhesion of great omentum to right loin, kinking the ascending colon, discovered and remedied. Patient got quite well and remained so.

CASE 5.—Patient aged 38. He was very nervous. Since the age of 20 subject to severe attacks of abdominal pain and constipation. Completely incapacitated. Had tried innumerable treatments. Adhesions of sigmoid flexure diagnosed from sigmoidoscopic examination. A long band of adhesions found passing from lower edge of stomach to left iliac fossa; others between iliac fossa and centre of sigmoid flexure. These were divided. Patient got well and put on 2 st. in weight. Excellent result.

CASE 6.—Patient aged 50. She suffered from intractable constipation, with frequent fæcal impaction, only relieved with difficulty. Sigmoidoscopy revealed kinking of sigmoid. Had been operated on some years previously for ovarian cyst. Extensive adhesions to abdominal wall and between sigmoid flexure and left iliac fossa, found and divided. Eighteen months later patient was in good health and much benefited by operation.

CASE 7.—Patient aged 50. He had a history of increasing constipation for nearly a year. Tumour in sigmoid flexure felt and thought to be a malignant growth. Large stercolith, largely composed of hair, discovered in sigmoid and removed through incision, which was subsequently closed. Complete recovery.

[3] Practitioner, May, 1910.

CASE 8.—Patient aged 50. He was steadily losing weight; much wasted. Had earthy-coloured skin and suffered from chronic constipation. Never well; prematurely old. Appendicostomy performed. He got completely well, and 18 months later was better than ever before in his life.

CASE 9.—Patient aged 42. Intractable constipation. She had earthy-coloured skin and was very thin and wasted. Chronic invalid; threatened to commit suicide. Bowels only open after large enemata. Severe abdominal pain. Appendicostomy performed. Some improvement, but she was far from being cured. Some obstruction probably overlooked in this case, and further operation advisable.

CASE 10.—Patient aged 52. For 7 years she had had attacks of abdominal pain, with severe constipation, and large quantities of mucus in the stools. Chronic appendicitis, with empyema of appendix found. Appendix removed. Patient cured.

CASE 11.—Patient aged 31. She had suffered from severe obstructive constipation nearly all her life. Bowels never acted normally, and defæcation usually accompanied by pain. Tough band of adhesions found between middle of sigmoid and left iliac fossa. She was completely relieved by operation and delighted with result 1½ years later.

CASE 12.—Patient aged 30. She had had severe constipation for 2 years. Blood in stools at times; severe abdominal pain. She was neurotic. Appendicostomy performed. Considerable degree of visceroptosis found. Patient relieved, but case too recent to know result.

CASE 13.—Patient aged 29. He had a history of severe constipation for 5 years, with pain in back and sacrum. Not relieved by medicine. Kink of pelvic colon diagnosed. Pelvic colon found to have an 8 inch mesentery, kinked on itself. Mesentery shortened by stitching. Considerable improvement, but patient not cured.

CASE 14.—Patient aged 29. She had 10 years' history of severe attacks of constipation and abdominal pain. Almost a complete invalid. Bowels only relieved by large enemata. She nearly had colotomy performed on several occasions for supposed obstruction. Appendicostomy gave some relief, but she still had attacks. Second laparotomy revealed gall-stones, which were removed. Complete and absolute recovery.

CASE 15.—Patient aged 22. He had had very severe constipation all his life. Constipation culminated every few months in attack of obstruction, which threatened his life. Sigmoidoscopic examination revealed well-marked congenital dilatation of pelvic colon, diameter being 9 inches. Appendicostomy performed to enable dilated colon to be kept washed out. He was considerably relieved; has had no serious attack since (3 years).

CASE 16.—Patient aged 32. She had 12 years' history of severe constipation. Unrelieved by drugs. Abdominal pain; loss of weight; mucous casts; severe visceroptosis. Appendicostomy performed. Patient greatly relieved; put on weight and got practically well. All signs of auto-intoxication, previously present, disappeared. Three years later she still had to use opening, but was in good health.

CASE 17.—Patient aged 45. She had 12 years' history of abdominal pain and constipation. Severe attacks; vomiting at times. Had tried every sort of treatment. Extensive adhesions found between stomach, transverse colon, and anterior abdominal wall (presumably result of perforated gastric ulcer, of which there was doubtful history). Adhesions could not be separated. Appendicostomy performed. She was much improved, but not quite well.

CASE 18.—Patient aged 31. Ten years' history of severe abdominal pain and tenesmus; constipation. Diagnosis: retroflexed uterus and adhesions of pelvic colon. Centre of pelvic colon found kinked by adhesions to right iliac fossa. Adhesions divided and uterus fixed in normal position. Patient got perfectly well and has remained so for two years.

CASE 19.—Patient aged 25. He had 3 years' history of severe constipation. Not relieved by aperients. Abdominal pain. Centre of sigmoid flexure sharply kinked by band of adhesions to left iliac fossa. Adhesions divided. Patient got well and bowels acted easily. Two years later he was still well.

CASE 20.—Patient aged 62. She had had increasing constipation for 7 years, unrelieved by aperients. Constipation culminated in obstruction, for which colotomy had to be performed. This revealed large tumour, due to pericolitis, in sigmoid. Four years later patient still in good health, but removal of tumour hardly possible.

CASE 21.—Patient aged 19. She had had severe constipation since childhood, but worse for last 3 years. Aperients proved useless; enemata often failed. Marked auto-intoxication. Appendicostomy. Patient better; auto-intoxication cured. Bowels acted regularly while opening used. Daily wash-outs still necessary 3 years later.

CASE 22.—Patient aged 51. She had had severe and increasing constipation for a year, with occasional attacks of partial obstruction. Tumour found in abdomen. Large papillomatous ovarian cyst discovered and removed. Patient quite well a year later.

CASE 23.—Patient aged 53. He had 2½ years' history of severe constipation, gradually becoming much worse. Pain in left side of abdomen and groin. Aperients of little use. Sigmoidoscopy, confirmed by X rays, led to diagnosis of pericolitis with stricture of sigmoid. Stricture caused by diverticula, nearly 6 inches long, found in middle of sigmoid. Ileo-sigmoidostomy performed. Recovery.

CASE 24.—Patient aged 46. He had some years' history of severe constipation, gradually becoming worse. Pain in left side. Sigmoidoscope revealed pericolitis stricture in sigmoid. Mass felt per abdomen. Operation advised, but patient put it off.

CASE 25.—Patient aged 53. He had had severe constipation for some time, culminating in attack of acute obstruction, only relieved with difficulty. Tumour in left side of abdomen. Pericolitis of sigmoid found. Resection of stricture. Patient recovered.

CASE 26.—Patient aged 7. Two years' history of severe constipation with occasional attacks of partial obstruction. Wasting. Abdomen great size. Tumour felt in right iliac fossa. At operation mass in right side found to be pericolitis of cæcum with extensive adhesions, probably tubercular. Small intestine much dilated. Anastomosis between transverse colon and ileum. Recovery.

CASE 27.—Patient aged 42. He had severe and increasing constipation. Abdominal pain located to left side of umbilicus. No blood; stools normal. Large pericolitis stricture discovered in sigmoid adherent to everything, including two loops of small bowel. Resected, and temporary colotomy performed. Complete recovery. Up to now, one year after operation, patient has refused to have colotomy closed.

CASE 28.—Patient aged 35. She had 2 years' history of increasing constipation, abdominal pain, constant headache, and loss of weight. Pain chiefly over appendix region. Adherent appendix removed. Severe degree of visceroptosis found. Transverse colon and lower part of stomach were pelvic organs. Patient much improved in health nine months later.

CASE 29.—Patient aged 47. He had been seriously ill for 2 years with constipation. Had lost flesh to such an extent that he was a mere skeleton. Skin of dark grey colour, with most unpleasant smell. Abdomen greatly distended. At operation whole of intestines found to be much dilated and extremely thin. Appendicostomy performed. Wound refused to heal, and in spite of treatment dilatation of bowel persisted. Bowels at last refused to act. Patient died apparently from complete inactivity of intestines.

CASE 30.—Patient aged 53. She had 6 months' history of severe and increasing constipation. Blood in stools. Malignant stricture suspected. Laparotomy performed. Area in sigmoid found where bowel was thick and apparently ulcerated for some inches. Also old chronically inflamed appendix. Appendix removed and abdomen closed. Complete recovery.

THE CAUSES LEADING TO EDUCATIONAL DEAFNESS IN CHILDREN,

WITH SPECIAL REFERENCE TO PREVENTION.

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SOME time has elapsed since a critical analysis of the causes which lead to deaf-mutism has been published. Arthur Hartmann's "Deaf-mute Statistics of the Province of Pomerania and the District of Erfurt" appeared in the *Archives of Otology* in 1880, about the same time that his work on Deaf-mutism was published. Mygind's well-known book appeared in 1894 and the excellent volume by Kerr Love and Addison in 1896. Many of the statistics quoted, however, have been compiled originally by laymen and can, therefore, have but little reliance placed upon them. It is in such statistics that "worms," "broken leg," and the like figure solemnly as causes of deafness. Considering the impetus which the institution of school medical inspection has given to the study of the child and those of his diseases which are in direct relation to education, it is time that a fresh inquiry into the causes of deaf-mutism, or, as I would rather put it, of educational deafness in children, was instituted. Such an inquiry must be made, not by the mere recording by laymen and teachers of what the parent or guardian says, but by a medical man who, by examination of the cases, can check and so verify or correct the causes given. Such an investigation should bear the stamp of at least approximate accuracy and would be of great value as furnishing some indication of the direction to be pursued in regard to prevention. Until the present time statistics of various kinds have been prepared and published apparently for the mere satisfaction of compiling tables of figures, and, although valuable indications for prophylaxis may lie therein, they have remained more or less buried, and the production of children educationally deaf has proceeded at about the same rate as before. The whole aim of school medical inspection is, or should be, the detection of conditions requiring treatment, following them up to ensure that they obtain treatment, and thus improving the physical and mental status of the potential citizen. There must always be a certain percentage of children sufficiently deaf to need special educational measures, but I feel certain that the production of both the congenital and acquired deaf child could be markedly diminished by the application of principles to be deduced from a careful inquiry into the causation of the condition which has brought the deaf scholar to the special school in which he is being educated.

In the few years during which I have been in charge of the London County Council Deaf Schools I have had continually before me the question of the reduction in number of the children for whose need they have been established, and for that reason I have endeavoured, so far as it was possible, to check by my own observations the replies given by parents as to causation. As I have already indicated, the causes given are often, to say the least of it, irrelevant and sometimes ludicrous. Examination of the child often enables the real cause to be ascertained; for instance, the deafness in a case said to be due to "teething" has been found to have

originated in middle-ear catarrh following adenoids, and a boy whose almost total loss of hearing "followed a broken arm" presented unmistakeable signs of congenital syphilis.

TABLE A.

Causes.	London County Council schools.	Margate.	Fitzroy-square.	Totals.
CONGENITAL	479	552	142	1173
Congenital aphasia	5	—	—	5
ACQUIRED.—				
Infective Diseases.				
Epidemic cerebro-spinal meningitis	1	—	1	2
Chicken-pox	1	—	—	1
Diphtheria	12	—	1	13
Enteric fever	2	1	—	3
German measles	2	—	—	2
Influenza	4	5	—	9
Measles	68	20	1	89
Mumps	1	1	1	3
Pneumonia	16	6	1	23
Rheumatic fever	1	—	—	1
Scarlet fever	58	48	10	116
Congenital syphilis	39	—	—	39
Small-pox	—	1	—	1
Tuberculosis	2	—	—	2
Typhus	—	3	—	3
Whooping-cough	7	7	1	15
Diseases of the Nervous System.				
Meningitis	65	18	4	87
Fits"	26	14	1	41
Convulsions"	12	1	2	15
"Brain fever"	1	9	2	12
Inflammation of the brain"	6	5	—	11
"Congestion of the brain"	—	3	—	3
Hydrocephalus	1	2	—	3
Primary Ear Disease.				
Middle-ear suppuration	86	14	6	106
,, catarrh	89	14	1	104
Otosclerosis	1	—	—	1
"Nerve deafness"	—	2	—	2
Miscellaneous.				
Injury	45	28	3	76
Concussion of the brain	5	—	—	5
Lightning stroke	—	1	—	1
Sunstroke	—	3	—	3
Burns	2	—	—	2
Shock or fright	3	2	—	5
"Teething"	3	18	—	21
"Vaccination"	—	4	—	4
Combined Causes.				
Scarlet fever and typhoid	1	—	—	1
,, ,, measles	3	1	—	4
,, ,, meningitis	1	—	—	1
,, ,, diphtheria	2	1	—	3
Measles and diphtheria	1	—	—	1
,, ,, pneumonia	7	—	—	7
,, ,, influenza	1	—	—	1
,, ,, whooping-cough	—	2	—	2
German measles and influenza	1	—	—	1
Doubtful	7	5	28	40
Unknown	9	5	117	131
No record	—	3	—	3
Totals	1076	799	322	2197

Proceeding in this manner, I have collected statistics relating to 2197 children of both sexes, 1076 of whom have been seen and examined by me personally in the London County Council schools and elsewhere, and the observations upon whom are presented in this paper. Placed side by side with these 1076, in the accompanying Table A, are statistics from the Royal School at Margate, from 1880 to 1910, and those obtained from an analysis of the register of the Fitzroy-square School, for both of which I am indebted to the courtesy of the respective headmasters, Mr. J. O. White and Mr. G. Sibley Haycock. Those from Margate have been tabulated practically as received; those from Fitzroy-square were obtained by me directly from the register. Although the figures from these two schools are the only ones of any value for statistical purposes that I have been able to obtain, I have preferred to deal only with the 1076 cases which I have examined personally, and, with one or two solitary exceptions, which will be pointed out, the percentages given of the various causes are obtained from them alone.

A glance at the table will demonstrate, to some extent, the difficulties of drawing deductions from statistics that have not been checked by a careful examination of the children by a doctor. For instance, in the Margate and Fitzroy-square figures, there is no evidence, out of the 1121 children, of a single case of acquired deafness due to congenital syphilis, although from the internal evidence afforded by the Fitzroy-square register I came to the conclusion that at least eight of the cases classed as "doubtful" were probably instances of this condition. The enormous number of 117—36·3 per cent. of the whole—classed as of "unknown" origin shows how little care was taken to determine the causation of the deafness. Indeed, it can be readily understood how a headmaster, whose business it is to teach and to classify for educational purposes the children committed to his charge, will have little time or inclination to investigate the causes of their deafness, even if he possesses the knowledge necessary for that purpose. These facts alone will justify my taking only the 1076 children whom I have personally examined as material from which to draw conclusions. The bulk of these children came under my observation in the London County Council schools, but some of them have been examined at Margate and Fitzroy-square, and I shall have occasion, in discussing the causation of educational deafness, to refer also to the records of the latter two institutions.

CONGENITAL CASES.

It will be noted that out of the 1076 children 484 were cases of congenital deafness, including congenital aphasia, or 44·98 per cent., the acquired cases being 592, or 55·0 per cent. This preponderance of acquired cases is in accordance with Mygind's prophecy[1] that "Future investigators will perhaps prove that acquired deafness has a still greater preponderance in the causation of deaf-mutism than we are authorised at present in believing." The principal statistics quoted by Mygind are those of E. Schmalz,[2] who gives the respective percentages of congenital and acquired cases as 68 and 32, and Hartmann,[3] who considers their relative numbers as almost equal. Mygind[4] gives a table of 18 countries and institutions showing altogether 3873 congenital (44·7 per cent.) and 4773 acquired (55·2 per cent.). These statistics bear a close resemblance to my own, showing how near was this author's surmise to the probable truth. Cases of congenital deafness, however, may be divided into two groups—true hereditary deafness, in which the family history shows other deaf-born persons either in the direct line or collateral branches; and cases of sporadic congenital deafness, in which the family history is deficient in other deaf-born relatives, but may contain instances of other defects, mental or physical. Some of these quite possibly may be cases in which the deafness was really acquired in early life. Indeed, it is quite common to find that, in many children believed to be congenitally deaf, the defect was not detected until as late as the second year of life, and may have been due to some cause which has escaped recognition. To this point I shall return later, merely remarking that, as our knowledge and methods improve, the real percentage of true sporadic cases will still further be reduced.

Leaving out of consideration for the time being the 5

[1] Deaf-mutism, London, 1894, p. 16.
[2] Ueber die Taubstummen, &c., 2. Ausgabe, Dresden und Leipzig, 1848, p. 6.
[3] Taubstummheit und Taubstummenbildung, Stuttgart, 1880, p. 204, Tab. 6B.
[4] Ibid., p. 12, Tab. 1.

children with congenital aphasia, out of the 479 cases no family history was obtainable in 148, in 186 there was, so far as could be ascertained, no family history of congenital deafness, and in the remaining 145 other examples of congenital deafness occurred, either in the direct line, in collateral branches, or among the brothers and sisters. The first group need not detain us; it includes, possibly, instances both of true sporadic congenital deafness and undetected acquired deafness. In the second group the number of children in each family is shown in Table B. It will be

TABLE B.

Number of children in family.	1	2	3	4	5	6	7	8	9	10	11	12	13	16	22
Examples	12	20	22	36	27	19	14	9	4	6	4	6	3	1	1

noted that the greater number occurred in families of from one to seven children. The other points presented in the histories of these children were as follows:—9 cases were *illegitimate*. There was a history of *insanity* in 7 cases, the father being insane in 4, a paternal aunt in 1, a great aunt in 1, and the maternal grandfather in 1. In 1 other case the father was mentally defective. In 2 cases, not included in these 7, the father committed suicide. *Chronic alcoholism* was ascertainable in 5 instances, the mother being alcoholic in 4, the father in 1. *Other defectives in the family* were noted in 9, these being a mentally defective brother in 1, a mentally defective sister in 1, a brother and a sister mentally defective in 1, a brother mentally defective and a brother a congenital cripple in 1, a brother imbecile in 1, a brother epileptic in 1, and a sister suffering from congenital paralysis in 1, whilst in one family of 13 children born of an alcoholic mother there were 1 born deaf, 1 idiot, and 1 hydrocephalic, and in another family there were a congenital cripple and a congenital paralytic besides the deaf-mute. The question of consanguinity in this group will be taken later.

The third group, containing 145 cases, some of whom were brothers and sisters, presented family histories of congenital deafness either in the direct line, in collateral branches, or in brothers and sisters. The number of children in the 123 families represented is shown in Table C.

TABLE C.

Number of children in family.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	20	?
Examples	4	15	11	18	10	9	9	9	3	1	4	6	3	2	1	1	17

Leaving the question of consanguinity for later discussion, that of congenital deafness in the direct line first concerns us. In nine families *both parents were born deaf*. (See Table D.)

TABLE D.

No.	Number of children—			Other relatives born deaf.	Other data available.
	In family.	Born deaf.	Otherwise defective.		
1	4	2	—	Uncle, aunt, 3 cousins.	—
2	4	2	2 (mentally defective).	—	—
3	2	1	—	—	Parents cousins.
4	6	2	—	—	—
5	2	2	—	Maternal grandfather, maternal aunt, deafness on father's side.	—
6	2	1	—	Father's brother.	—
7	4	3	—	—	—
8	1	1	—	2 paternal uncles, maternal aunt.	—
9	?	1	—	—	—

In 11 cases the *father was born deaf* (see Table E) and in 6 the *mother was born deaf* (see Table F).

In 26 families out of 123, or 21·1 per cent., therefore, there was a family history of congenital deafness in one or both parents, and in 15, or 57·6 per cent., of these the same defect appeared in other relatives.

TABLE E.

No.	Number of children—		Other relatives born deaf.	Other data available.
	In family.	Born deaf.		
1	8	1	Paternal aunt.	—
2	2	2	Both grandfathers.	—
3	4	1	Paternal uncle.	—
4	?	1	—	—
5	11	1	—	Mother a prostitute.
6	4	1	Deafness on father's side.	—
7	6	2	—	Parents first cousins.
8	4	2	—	—
9	1	1	—	—
10	5	1	—	—
11	?	1	2 paternal cousins.	Mother alcoholic.

TABLE F.

No.	Number of children—		Other relatives born deaf.	Other data available.
	In family.	Born deaf.		
1	8	1	Maternal grandmother.	—
2	?	2	,, ,,	—
3	6	1	Maternal great uncle.	—
4	3	1	Maternal grandfather and grandmother.	—
5	?	1	Maternal aunt.	—
6	7	1	,, ,,	—

There were four other families in which *congenital deafness was present in the direct line*, as shown in Table G. There were thus 30 families out of 123, or 24·3 per cent., showing this feature.

TABLE G.

No.	Number of children—		Relatives born deaf.	
	In family.	Born deaf.	Direct line.	Collateral.
1	4	2	Maternal grandmother.	Maternal uncle and aunt.
2	2	2	Grandmother.	—
3	12	1	Paternal grandmother.	—
4	2	1	Maternal grandfather.	Maternal uncle.

Taking next the 26 families in which congenital deafness was present, only in *collateral branches* of the family, these also are best seen by tabulation (see Table H).

On comparing Tables D, E, F, G, and H it will be found that out of the 123 families congenital deafness appeared in 56, or 45·5 per cent.

Other parental conditions.—In one case, a paralytic mother, who had been bedridden for eight years, had during that time eight children, of whom two were born deaf and one with congenital dislocation of the hip. *Insanity* was noted in three families, two of which will be found in Table H, Nos. 5 and 15; the other was one in which the parents were first cousins, the father being insane and the number of children four, of whom two were born deaf. Lastly must be noted the families in which there was more than one child born deaf or otherwise defective. These were 48 in number,

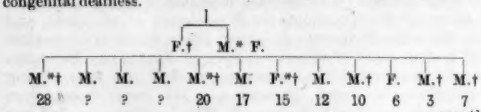
or 39·02 per cent. of the 123 families observed. They are shown in Table J.

To these particulars must be added the instances of congenital deafness in the direct line occurring at the Margate

TABLE H.

No.	Number of children— In family.	Born deaf.	Mentally defective.	Collateral deafness.	Other available data.
1	5	1	—	Maternal cousin.	—
2	5	1	—	Maternal great-aunt's two children.	—
3	4	3	—	Maternal grandfather's cousin.	—
4	2	1	—	Maternal cousin.	—
5	9	1	—	Maternal great aunt.	Maternal great-grandmother insane.
6	1	1	—	Paternal uncle.	—
7	?	1	—	Maternal ,,	—
8	15	2	—	2 uncles, 1 aunt, 3 cousins.	—
9	?	1	—	Maternal uncle and ? 2 aunts.	—
10	3	1	—	Maternal great aunt.	—
11	3	1	—	Paternal cousin.	—
12	?	1	—	2 maternal cousins.	—
13*	12	6	—	Paternal aunt.	Retinitis pigmentosa.
14	?	1	—	3 cousins.	—
15	4	2	—	Paternal cousin.	Father insane.
16	4	1	—	Aunt.	—
17	5	1	—	Maternal cousin.	—
18	7	1	—	Paternal uncle.	Mother alcoholic.
19	12	1	—	Maternal cousin.	—
20	6	3	—	2 paternal uncles.	—
21	6	2	—	Paternal uncle.	—
22	3	1	—	,, aunt.	—
23	?	1	—	Second cousin.	—
24	2	1	—	Deafness on father's side.	—
25	7	3	—	Paternal cousin.	—
26	13	3	1	,, uncle.	—

* This family is so interesting and appalling an instance of defect that I append the genealogical tree so far as I have been able to ascertain it. The figures indicate the ages of the offspring at the time of obtaining the genealogical table, the asterisks (*) the instances in which retinitis pigmentosa was present, and the "daggers" (†) congenital deafness.



Royal School between 1880 and 1910, the total number of congenital cases being 552. In 16 families both parents were deaf born, with 45 similarly defective children. In one of these cases there were five in family, all born deaf, and in addition to the father and mother a paternal aunt and a maternal uncle were congenitally deaf, whilst in another instance both parents, two paternal uncles, two maternal uncles, and one maternal aunt were all congenitally deaf.

An analysis of the Register of the Fitzroy-square school gives the particulars, out of 142 cases, representing 61 families, arranged in Table K.

As I have been unable to ascertain the exact number of families showing a history of congenital deafness at the Margate Royal School I cannot use the statistics of that institution to arrive at the percentage of cases showing the defect in the direct line. Taking, however, the 123 families of my own cases and the 129 from the Fitzroy-square School, there were 32 families out of the 252 which gave such a history, or nearly 12·7 per cent., whilst deafness in collateral branches or among brothers and sisters was revealed in 116, or 46·03 per cent.

In endeavouring to arrive at the part played by heredity in congenital deafness, as I pointed out in my articles upon the education of the deaf,[5] "one must look to the idea of

TABLE J.

No.	Number of children— In family.	Born deaf.	Deaf and mentally defective.	Mentally defective.	No.	Number of children— In family.	Born deaf.	Deaf and mentally defective.	Mentally defective.
1	9	3	—	—	25	2	2	—	—
2	8	1	1	1	26	5	2	—	—
3	5	3	—	—	27	4	1	—	1
4	2	—	—	—	28	?	4	—	—
5	8	2	—	—	29	10	4	—	—
6	2	2	—	—	30	11	3	—	—
7	4	2	—	—	31	20	4	—	—
8	14	3	—	—	32	2	2	—	—
9	?	?*	—	—	33	2	2	—	—
10	6	2	—	—	34	7	2	—	—
11	11	2	—	—	35	6	2	—	—
12	8	4	—	—	36	3	3	—	—
13	14	4	—	—	37	4	2	—	—
14	3	3	—	—	38	8	2	—	—
15	13	2	—	—	39	5	3	—	—
16	4	3	—	—	40	2	2	—	—
17	13	2	—	—	41	?	2	—	
18	5	3	—	—	42	11	3	—	—
19	12	4	—	—	43	9	2	—	—
20	6	3	—	—	44	2	2	—	—
21	2	2	—	—	45	5	2	—	—
22	7	3	—	—	46	3	3	—	—
23	7	2	—	—	47	3	3	—	—
24	?	2	—	—	48	12	2	—	—

* The notes state merely, "other children in family born deaf."

TABLE K.

No.	Number born deaf.	Relationship of parents, if any.	Other relations born deaf.	No.	Number born deaf.	Relationship of parents, if any.	Other relations born deaf.
1	2	—	—	17	2	—	—
2	3	—	—	18	2	—	—
3	2	—	—	19	3	—	Paternal cousin.
4	2	First cousins.	—	20	2	—	—
5	3	—	—	21	2	—	—
6	2	Second cousins.	Maternal uncle and aunt.	22	4	—	—
				23	2	—	—
				24	3	—	—
7	4	—	—	25	2	First cousins.	—
8	2	Cousins.	—				
9	4	—	—	26	2	Cousins.	Two first cousins.
10	2	—	—				
11	3	—	—	27	3	—	—
12	3	—	—	28	3	—	—
13	2	—	—	29	2	—	—
14	3	—	—	30	1	—	Both parents.
15	2	—	—				
16	2	—	—	31	1	—	Great grandfather

heredity from a wider standpoint than that of direct transmission, and consider not the direct ancestry but the collateral family tree." If it were possible to obtain accurate and complete family trees of congenitally deaf persons, I believe that the defect would be found to follow Mendelian

[5] THE LANCET, March 11th, 1911, p. 652.

principles, but, unfortunately, the difficulties at present in the way of gathering such data are practically insurmountable. I would refer the reader to the article just quoted for further information upon the subject. A summary of the results of marriages of the deaf, obtained from the careful and exhaustive examination of 4471 such unions, will be found in Fay's great work.[6] Hammerschlag[7] has pointed out that hereditary deafness is found associated fairly frequently with other hereditary pathological conditions. He reports the history of two families, one extending over five generations and showing how deafness, deafness and mental alienation, epilepsy and other psycho-neuroses, are found associated in the same family.

The next point for discussion is *consanguinity*. In Group 2, out of 186 cases showing no family history of congenital deafness, 8, and in Group 3, out of 145 showing a family history of deaf births, 14 were the offspring of cousin marriages. The number of children in each family, the number of those born defective, and the degree of relationship of the parents, are shown in Table L. The number of families represented in Group 2 was 186, and in Group 3 it was 123, so that, out of a total of 309 families, cousin marriages occurred in 22, or 7·08 per cent. This percentage is in striking contrast with that in the 592 acquired cases, representing the same number of families. Here only two were the offspring of cousin marriages, or 0·32 per cent.

TABLE L.

No.	Number of children—			Degree of cousinship.	Other data.
	In family.	Born deaf.	Mentally defective.		
1	3	1	—	First cousins.	—
2	1	1	—	Not stated.	—
3	4	1	—	First cousins.	—
4	7	1	2	,, ,,	—
5	8	1	—	Not stated.	—
6*	7	1	—	First cousins.	—
7	2	1	—	Not stated.	—
8	6	1	—	First cousins.	—
9	7	2	1	,, ,,	—
10	6	1	—	,, ,,	Deafness on father's side.
11	1	1	—	,, ,,	Deafness on mother's side.
12	4	3	—	,, ,,	—
13	8	2	—	Second cousins.	Paternal grandfather born deaf.
14	2	1	—	Not stated.	Both parents born deaf.
15	5	4	—	,, ,,	—
16	7	1	—	,, ,,	Paternal grandfather born deaf.
17	3	2	—	,, ,,	Illegitimate.
18	3	2	—	,, ,,	—
19	2	2	—	First cousins.	—
20	4	2	—	,, ,,	Father insane.
21	2	2	—	,, ,,	—
22	6	2	—	,, ,,	Father born deaf.

* The offspring of this family were as follows: (1) died at 3 months; (2) died at 15 weeks; (3) died at 4 months; (4) and (5) born dead; (6) the deaf-mute; (7) premature at 8 months.

Mitchell[8] found that in 400 deaf-mutes 1 in every 16, or 6·25 per cent., had parents who were blood relations, whereas the proportion of cousin marriages in Great Britain is probably about 1 in 60 or 70 (1·6 to 1·4 per cent.). At the Margate Royal School, between 1880 and 1910, there were 23 instances of cousin marriage, giving rise to 42 deaf-born children; this gives a percentage of 4·02 of cousin marriages for 552 congenital cases in this institution, but as I am unable to ascertain the number of families represented by these 552 cases, this percentage is not of much value. The statistics obtained from the register of the Fitzroy-square School are more useful and extremely interesting. There were 142 undoubted deaf-born cases, representing 137 families. Consanguinity occurred in no less than 37 of these families, or 27·0 per cent. The parental relationship in these families was as follows:—

First cousins.—Twenty-two families, comprising 27 offspring (with five families containing 2 deaf-born children in each).

Second cousins.—Three families, comprising 5 offspring (with two families containing 2 deaf-born children each).

Third cousins.—One family, comprising 1 deaf-born child.

"*Distant cousins.*"—One family, comprising 1 deaf-born child.

Uncle and niece.—One family, comprising 1 deaf-born child.

Degree of consanguinity not stated.—Eight families, comprising 9 children (with one family containing 2 deaf-born children).

The high percentage of consanguineous marriages in this institution—more than three times as great as my own cases showed—is probably accounted for by the large proportion of Jews educated at Fitzroy-square, it being a well-known fact that intermarriage is very common in that race and that it produces a high proportion of defectives. If the families from Fitzroy-square be added to those of my own cases, we have 59 consanguineous marriages out of 446 families, the combined percentage being 13·25. Whichever of the three percentages be taken (leaving Margate out of the question), a much higher proportion of consanguineous marriages is found in the family histories of congenitally deaf cases than among the normal population. Fay, in his "Marriages of the Deaf in America," devotes a chapter to consanguineous marriages of the deaf, of which there were 31 in 4471 unions (0·693 per cent.). This percentage is small, but it must be remembered that it refers to marriages of the deaf only. Investigation showed that the percentage of deaf children born from marriages reported as consanguineous was nearly four times as great as from marriages not so reported.

Other points in the family histories in Group 3 were insanity and alcohol. With regard to these accurate information is very difficult to obtain, and the few facts that I have been able to glean are very meagre. They are perhaps worth reproducing as examples of the tainted stock from which congenital deaf-mutes may come. *Insanity* occurred in three families. The first, a family of 9 children, with 1 born deaf, showed the maternal great grandmother insane and the maternal great aunt born deaf. In the second, a family of 4, with 2 born deaf, the father and mother were first cousins, the former being insane. The third showed 4 children, with 2 born deaf, the father insane and a paternal cousin born deaf. Five cases showed *alcohol* as follows: (1) 4 children, all born deaf, mother alcoholic; (2) 12 children, 4 born deaf, mother alcoholic; (3) 1 child born deaf, father mentally defective, 2 paternal cousins born deaf, mother alcoholic; (4) 3 children, 2 born deaf, both parents alcoholic; (5) 7 children, 1 born deaf, paternal uncle born deaf, mother alcoholic. Mygind[9] gives statistics as to alcoholism in congenital deafness, quoting Lemcke[10] as showing its occurrence in 8 per cent. of all cases, and with the same frequency amongst the parents of congenital deaf-mutes as in those with acquired deafness. He states that in Denmark the percentage was 9·5, the father being responsible in most instances. My own cases, just mentioned, represent 5 out of 309 families, or 1·6 per cent., which, when one considers the prevalence of the alcohol evil in the class from which most of these children are drawn, is absurdly inadequate. I doubt somewhat whether if we were able to obtain a large number of figures relating to a history of alcoholism in deaf-mute and non-deaf-mute families and to compare them we should find any striking difference. Alcohol figures in tainted histories, it is well known, but whether as a cause or as an effect it is difficult to say. At the same time, whilst one must admit that the influence may be doubtful, the potentiality possessed by alcohol to injure the germ plasm must be taken into account in discussing the causation of deaf birth, especially when the failing is on the maternal side, as in all the cases noted above.

Illegitimacy was noted in 14 out of all the 479 cases, or 2·9 per cent. This proportion is so small that I should not deem it worthy of mention, especially as I could not

[6] Marriages of the Deaf in America, Volta Bureau, Washington, 1898.
[7] Zeitschrift für Ohrenheilkunde, Band lix., No. 4.
[8] Edinburgh Medical Journal, March, April, June, 1865.
[9] Ibid., p. 94.
[10] Die Taubstummheit in Mecklenburg-Schwerin, &c., Leipsic, 1892, p. 127.

ascertain the number of illegitimate births among the acquired cases, were it not that Mygind[11] discusses it as a possible factor. The statistics quoted by him are those of H. Schmaltz[12]: for Saxony, 6·2 per cent. (12 per cent. for all births); Denmark, 5·4 per cent.; Wilhelmi,[13] for Magdeburg, 2·2 per cent. Mygind points out that the comparatively small number of illegitimate deaf-mutes may be owing partly to the high mortality which prevails among children born out of wedlock, but the difference between illegitimate births in general and in congenital deafness cases in particular is so considerable as to suggest that illegitimate children are less liable to deaf-mutism than others, possibly because illegitimate unions are seldom consanguineous.

Syphilis.—Although, as I have shown elsewhere,[14] congenital syphilis is a potent cause of acquired educational deafness in children, very little is known as to the influence of the disease upon deaf birth. Baratoux examined a number of new-born syphilitic infants and found numerous alterations in the ears, chiefly purulent middle-ear inflammations, thickening of the tympanic membrane, adhesions of the membrane to the promontory, hyperæmia, hæmorrhages, and accumulations of pus in the labyrinth and destruction of the organ of Corti. Mayer[15] has examined the meninges and temporal bones of 11 congenital syphilitic children, who died at ages varying from 10 minutes to 17 months, and whose deaths were due directly or indirectly to syphilis. His findings were interesting and really require to be read *in extenso*. In 9 out of the 11 cases pus was found in the tympanic cavity, in 10 inflammatory changes in the lepto-meninges. In only one case were the contents of the internal auditory meatus found to be quite healthy. Six showed signs of inflammation of the labyrinth and in many the soft structures of the cochlea had undergone degeneration. The researches of both these observers indicate that a certain number of instances of congenital deafness may be due to syphilis. Such would probably occur among the sporadic cases already alluded to, and I have long been of opinion that this is the fact. It occurred to me in October, 1911, that it might be possible to settle the matter by recourse to the Wassermann reaction, and I am at present engaged in an investigation which is not sufficiently completed to warrant publication.

In dealing with these cases of congenital deafness I have only considered what appear to me to be the most important and likely factors in causation. Such questions as influences during pregnancy, twisting of the umbilical cord, pressure on the fœtal head, &c., have to be discarded as unlikely to prove worthy of consideration. Mothers are fond of accounting for the physical shortcomings of their children by "maternal impressions," but investigation usually proves such premisses to be fallacious, as in Melland's case,[16] in which a malformation of the auricle was said to be due to the constant meeting of a similar deformity during the last three months of pregnancy, although the pinna has acquired its adult form by the sixth week. In five of my cases the mothers advanced such theories—one "met a deaf-mute whilst pregnant," another had a parental fright at 4½ months (in his case there was a strong family history of deaf-birth), another was thrown out of a trap at six months, a fourth was "frightened when pregnant," and the fifth was brutally ill-treated by her husband during the greater part of her pregnancy. In the last two cases it is possible that the child may have received an intra-uterine injury.

(To be continued.)

[11] Ibid., p. 102.
[12] Die Taubstummen im Konigreich Sachsen, Leipzig, 1884, p. 64.
[13] Statistik der Taubstummen des Regierungsbezirkes Magdeburg, &c., Berlin, 1873, p. 76.
[14] Journal of Laryngology, vol. xxv., p. 181.
[15] Archiv für Ohrenheilkunde, Band lxxvii., Hefte 3 und 4, p. 189.
[16] British Journal of Children's Diseases, vol. v., p. 481.

THE WELSH MEMORIAL TO KING EDWARD.—The executive committee of the King Edward VII. Welsh National Memorial for the Prevention and Abolition of Tuberculosis have appointed the following physicians: Dr. James P. Cullen, Dr. H. Hyslop Thomson, Dr. Gerald Hamilton-Wallace, Dr. E. Fairfield Thomas, Dr. Norman Tattersall, Dr. M. J. Johnston, Dr. James C. Gilchrist, Dr. Cuthbert G. Welch, Dr. N. K. Jordan, Dr. D. A. Powell, and Dr. Thomas Llewellyn Evans. We understand that Dr. Welch and Dr. Powell have since resigned.

THE TREATMENT OF DIPHTHERIA INFECTION BY MEANS OF DIPHTHERIA ENDOTOXIN.

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THOSE occupied in the prevention and treatment of infective diseases know how frequent are diphtheria carriers and chronic cases of diphtheria. An attack of diphtheria after early treatment with antitoxin may pass rapidly to a complete convalescence. In a few weeks the patient may be well, ready and desirous for discharge from quarantine; unfortunately, however, the diphtheria bacilli may still be present in the throat or nose. Some of these chronic cases may remain infective for months, yielding pure cultures of virulent diphtheria bacilli; indeed, one such case, under the care of one of us (A. T. N.), persisted for so long as 15 months. Naturally such cases are a source of trouble to the authorities of isolation hospitals: the expense of their maintenance is great; and their anxious, and often importunate, relations may fail to recognise that continued isolation is essential in the interests of the public health.

The cause of this chronicity and persistence of infection is not known. Certainly, it seems to bear no relation to the quantity of antitoxin given to the patient, nor is it associated especially with any one morphological variety of the bacillus diphtheriæ. Again, it is impossible to foretell in what patients the infection will become chronic, and hence difficult to answer the question of the parent, who asks how long the child will remain infectious. Speaking generally, we should say that children, who physically are not robust, are more likely to become chronic carriers than other more healthy children. Patients suffering from scarlet fever, who at the same time harbour the B. diphtheriæ in nose or throat, more often become chronic carriers of the bacillus than do pure diphtheria cases. On the other hand, diphtheria patients who subsequently contract scarlet fever do not tend towards chronicity in their B. diphtheriæ infection. We have, unfortunately, no original statistics in support of these statements; and much work remains to be done in the elucidation of the incidence of these chronic infections.

Ever since the practice of swabbing convalescent cases of diphtheria became general the treatment of the chronic carrier has received more and more attention. On the whole, it may be said that the treatment of this condition is very unsatisfactory. Perhaps complete isolation (in order to prohibit the possibility of reinfection) has, in hospitals, hitherto been the least unsuccessful. Local treatment, antiseptic gargles, syringing, lozenges, sprays, and inhalations have given no definite and immediate results; nor do we wonder at this failure. The crypts of the tonsils or the accessory air sinuses of the nose offer favourable and impregnable resting-places for the bacilli, where they are far removed from the influence of the antiseptic. Medicinal treatment likewise is unlikely to destroy the organisms. It was thought by one of us (A. T. N.) that possibly potassium iodide, given until slight iodism was established, might act antiseptically upon the lining membrane of the accessory nasal air sinuses, but a short trial gave no favourable results, and the treatment was discontinued in order to test the properties of the diphtheria endotoxin, which is the subject of this paper. It has been noticed, as the B. diphtheriæ in these chronic cases grow fewer in number, that other organisms (B. hofmanni, cocci, yeasts, &c.) become more and more plentiful in the nose and throat swabs; this led us to attempt the cultivation in the nose or throat of these other organisms, in the hope that they would overgrow and ultimately depose the B. diphtheriæ. No success, however, attended the treatment of two chronic cases of diphtheria infection by means of living cultures of other micro-organisms.

In selecting our cases for treatment with diphtheria endotoxin we have, so far as we were able, taken only those

in whom chronicity of infection seemed to be well-established, but here, as in other treatment, the "post hoc aut propter hoc" difficulty is present—Would the patients have become free of their infection without the use of the endotoxin?

We tried to put this question to a practical test as follows. Ordinary cases of faucial diphtheria are not, as a rule, free from infection for a month or five weeks after the onset of the attack. We gave diphtheria endotoxin to five such cases while the membrane was still present on the tonsils; all these cases gave practically pure cultures of the B. diphtheriæ. Between ten days and a fortnight from the date of injection of the endotoxin four of these five cases were free from diphtheria bacilli, and the fifth was free a fortnight later. This rapidity of the disappearance of the micro-organisms may have been a coincidence, but we think it unlikely.

As will be seen, in the cases we describe below most of our patients had harboured the diphtheria bacilli for many weeks or months. After one or more injections of the endotoxin all the cases showed definite improvement. In many the diphtheria infection ceased entirely; in some it persisted, and the patient remained uncured; but even in these unsuccessful cases we noted invariably a diminution in the number of bacilli present microscopically; where previously the swab had given almost a pure culture of the diphtheria bacillus, a few isolated clumps only were found.

With regard to dosage, we began with small quantities of the endotoxin, 0·5 mgm. and 1·0 mgm.; but our cases treated with these doses did not do so well as subsequently, when we employed an initial dose of 2 mgm. At the end of a week or ten days, if the swab was still positive, a dose of 5 mgm. was given; and this, if necessary, was repeated later. The dose was the same for children and for adults. No ill effects, except some redness and tenderness around the site of injection, follow the administration of the endotoxin. In passing, we may say that as the endotoxin gets older by keeping the local reaction diminishes in intensity, and we do not think that endotoxin which has been kept for more than three months is as useful therapeutically as that more recently prepared. Only one of our cases showed any general disturbance, and that merely by a transitory rise of temperature and a feeling of malaise. Another case (No. 12) returned to hospital three months later with typical faucial diphtheria; this might seem to show that the endotoxin is not protective (for long, at any rate) against infection with the B. diphtheriæ.

Before passing to a detailed consideration of our cases we wish to insist that in no way do we consider the diphtheria endotoxin to be a substitute for diphtheria antitoxin; the latter is to be used in the *treatment* of the case in the ordinary way.

Group I.

These five cases were admitted to hospital when suffering from typical faucial diphtheria. One or both tonsils were covered by membrane, and the cases were of moderate severity. Antitoxin was given to each case on admission, and on the following day each patient received an injection of 2 mgm. of the endoxtoxin.

In these and the following tables + indicates that diphtheria bacilli were present, − that they were absent, and 0 that no swab was taken.

Case 1.—Female, aged 16.

Date.	Feb. 14th.	Feb. 15th.	Feb. 24th.	Feb. 29th.	March 3rd.	March 16th.	March 19th.
Nose	0	2 mgm. of endo-toxin.	−	0	0	−	−
Throat	+		+	−	−	−	−

Case 2.—Female, aged 8.

Date.	Nov. 13th.	Nov. 14th.	Nov. 22nd.	Nov. 24th.	Dec. 12th.
Nose	0	2 mgm. of endo-toxin.	0	−	−
Throat ...	+		−	−	−

Case 3.—Male, aged 2.

Date.	Nov. 5th.	Nov. 6th.	Nov. 13th.	Nov. 16th.	Nov. 20th.	Dec. 4th.
Nose	0	2·0 mgm. of endo-toxin.	+	−	−	−
Throat	+		−	−	−	−

Case 4.—Female, aged 31.

Date.	Nov. 8th.	Nov. 7th.	Nov. 17th.	Nov. 20th.	Nov. 28th.
Nose	0	2 mgm. of endo-toxin.	−	0	−
Throat ...	+		−	−	−

Case 5.—Female, aged 14.

Date.	Feb. 20th.	Feb. 21st.	Feb. 28th.	March 3rd.	March 20th.	March 22nd.	March 23rd.
Nose	−	2 mgm. of endo-toxin.	0	0	−	0	−
Throat	+		+	+	−	−	−

Group II.

The following cases are examples of chronic diphtheria infection, which disappeared after injections of the diphtheria endotoxin. In some cases, it will be seen, the infection had been of some months' duration.

Case 6.—Male, aged 7. A Case of Scarlet Fever with Superadded Diphtheria Infection of the Throat.

Date.	Oct. 30th.	Nov. 14th.	Nov. 21st.	Nov. 28th.	Dec. 15th.	Dec. 27th.	Jan. 8th.	Jan. 12th.	Jan. 13th.	Jan. 19th.	Jan. 20th.	Jan. 22nd.
Nose	−	0	−	0	−	0	0	0	2 mgm. of endo-toxin.	0	−	−
Throat	+	+	+	+	+	+	+	+		−	−	−

Case 7.—Male, aged 6. A Case of Scarlet Fever, complicated with Diphtheria Infection of the Nose and Nasal Discharge.

Date.	Nov. 14th.	Dec. 22nd.	Jan. 1st.	Jan. 17th.	Jan. 29th.	Feb. 12th.	Feb. 13th.	Feb. 25th.	Feb. 26th.	Feb. 28th.
Nose	+	+	+	+	+	+	2 mgm. of endo-toxin.	−	−	−
Throat	−	−	0	0	0	−		0	−	−

Case 8.—Female, aged 8. Diphtheria.

Swabs from the nose were negative throughout. Between August 13th and Feb. 15th of the following year the patient's throat swabs were positive—16 in all were taken. They are not entered separately in the table.

Date.	August 13th to Feb. 15th.	Feb. 16th.	Feb. 23rd.	March 3rd.	March 4th.	March 9th.	March 16th.	April 15th.	April 17th.
Throat	+	0·5 mgm. of endo-toxin.	1 mgm. of endo-toxin.	+	2·5 mgm. of endo-toxin.	+	−	−	−

Case 9.—Female, aged 12. Scarlet Fever, accompanied by Diphtheria Infection of the Nose and Chronic Nasal Discharge.

Date.	August 15th.	Sept. 22nd.	Oct. 9th.	Oct. 23rd.	Nov. 6th.	Nov. 7th.	Nov. 19th.	Nov. 20th.	Nov. 21st.	Nov. 27th.	Nov. 30th.	Dec. 7th.	Dec. 13th.
Nose ...	+	+	+	+	+	0·5 mgm. of endotoxin.	–	+	1 mgm. of endotoxin.	–	–	–	–
Throat ...	–	0	+	–	+		–	+		–	–	–	–

Case 10.—Female, aged 12. Scarlet Fever and Infection of the Nose by Diphtheria Bacilli.

Date.	Jan. 3rd.	Feb. 9th.	Feb. 14th.	Feb. 15th.	Feb. 23rd.	Feb. 24th.	Feb. 26th.	Feb. 28th.	March 9th.	March 10th.	March 13th.
Nose	+	+	–	+	+	+	0·5 mgm. of endotoxin.	+	–	–	–
Throat ...	–	–	–	0	0	0		0	0	–	0

Case 11.—Male, aged 8. Scarlet Fever and Nasal Diphtheria.

Date.	Dec. 1st.	Dec. 20th.	Jan. 5th.	Jan. 6th.	Jan. 14th.	Jan. 17th.	Jan. 18th.
Nose	+	+	+	0·5 mgm. of endotoxin.	–	–	–
Throat	–	0	–		–	0	–

Case 12.—Male, aged 6. Scarlet Fever, with Diphtheria Infection of the Nose.

The patient returned to hospital three months after discharge with a severe attack of faucial diphtheria, the nose swabs on this second occasion being negative.

Date.	Nov. 16th.	Dec. 1st.	Dec. 19th.	Dec. 20th.	Dec. 24th.	Dec. 26th.	Dec. 31st.	April 3rd.
Nose ...	+	+	+	2 mgm. of endotoxin.	–	–	–	–
Throat ...	–	0	–		0	–	–	+

Case 13.—Female, aged 5. Scarlet Fever and B. Diphtheriæ in the Nose.

Date.	Oct. 3rd.	Nov. 5th.	Nov. 15th.	Dec. 2nd.	Dec. 23rd.	Jan. 8th.	Jan. 11th.	Jan. 28th.	Feb. 7th.	Feb. 9th.	Feb. 12th.
Nose	+	+	+	+	+	+	2 mgm. of endotoxin	+	–	–	–

Case 14.—Female. Scarlet Fever with B. Diphtheriæ in Nasal Discharge. Throat Swabs all Negative.

Date.	Nov. 15th.	Dec. 18th.	Jan. 2nd.	Jan. 22nd.	Jan. 23rd.	Jan. 30th.	Feb. 2nd.	Feb. 12th.	Feb. 15th.	Feb. 25th.	Feb. 26th.	Feb. 27th.	Feb. 28th.
Nose.	+	+	+	+	1 mgm. of endotoxin.	+	2 mgm. of endotoxin.	+	5 mgm. of endotoxin.	–	–	–	–

Case 15.—Male, aged 7. Scarlet Fever with B. Diphtheriæ Infection of both Nose and Throat.

Date.	Oct. 9th.	Nov. 12th.	Nov. 26th.	Dec. 14th.	Dec. 23rd.	Jan. 2nd.	Jan. 3rd.	Jan. 10th.	Jan. 11th.	Jan. 19th.	Jan. 20th.	Jan. 21st.
Nose	+	+	+	+	+	+	2 mgm. of endotoxin.	+	5 mgm. of endotoxin.	–	–	–
Throat	+	+	–	–	–	–		0		0	–	–

Case 16.—Female, aged 8. Diphtheria with Subsequent Scarlet Fever. B. Diphtheriæ Present in Throat. Nose Negative.

Date.	Oct. 9th.	Nov. 10th.	Nov. 25th.	Dec. 15th.	Dec. 22nd.	Jan. 5th.	Jan. 23rd.	Jan. 24th.	Feb. 3rd.	Feb. 8th.	Feb. 12th.
Throat ...	+	+	+	+	+	+	+	2 mgm. of endotoxin.	–	–	–

Case 17.—Male, aged 9. Chronic B. Diphtheriæ Infection of Nose.

Date.	Sept. 6th to Jan. 8th.	Jan. 9th.	Jan. 18th.	Jan. 20th.	Jan. 24th.	Feb. 4th.	Feb. 7th.
Nose ...	+	2 mgm. of endotoxin.	+	5 mgm. of endotoxin.	–	–	–

Case 18.—Female, aged 7. Chronic B. Diphtheriæ Infection of Nose.

Date.	Feb. 8th to March 29th.	April 8th.	April 9th.	April 14th.	April 21st.	April 22nd.	April 30th.	May 2nd.	May 9th.
Nose... ...	+	–	+	+	+	2 mgm. of endotoxin.	–	–	–

Group 3.

We pass now to the consideration of those cases in which the administration of diphtheria endotoxin did not lead to disappearance of the bacilli. As we have already stated, we consider that all these failures showed, at least, some diminution in the number of micro-organisms present in the swabs, and that the failure in these cases was not absolute. Some of these cases were those first treated, and were given small doses of the endotoxin; and, although we do not insist on this, we are inclined to believe that this smallness of dose may have accounted for our lack of success in treating these patients.

Case 19.—Male, aged 6. Scarlet Fever with Diphtheria Infection of the Nose and Throat.

Date.	Oct. 29th to Dec. 10th.	Dec. 11th.	Dec. 17th.	Dec. 18th.	Dec. 21st.	Dec. 27th.	Jan. 8th.	Jan. 16th.	Jan. 17th.
Nose ...	+	0·5 mgm. of endotoxin.	+	+	+	–	+	–	–
Throat ...	+		+	+	+	+	–	–	–

Case 20.—Male, aged 9. Scarlet Fever, with Chronic Nasal Diphtheria Infection.

Date.	Jan. 1st.	Jan. 10th.	Jan. 12th.	Jan. 13th.	Jan. 21st.	Jan. 22nd.	Jan. 27th.	Feb. 2nd.	Feb. 27th.	March 3rd.
Nose...	+	+	+	0·5 mgm. of endotoxin	+	1 mgm. of endotoxin	+	+	+	–
Throat	0	–	+		–		+	+	–	–

Case 21.—Female, aged 14. Scarlet Fever with Nasal Diphtheria Infection.

Date.	Nov. 3rd.	Dec. 7th.	Dec. 8th.	Dec. 16th.	Dec. 17th.	Dec. 21st.	Dec. 26th.	Dec. 29th.	Jan. 8th.	Jan. 10th.
Nose	+	+	0·5 mgm. of endotoxin	+	1 mgm. of endotoxin	+	+	+	–	–

Case 22.—Male, aged 7. Scarlet Fever with Chronic Diphtheria Infection of the Nose and Throat.

Date.	Jan. 14th to Feb. 16th.	Feb. 17th.	Feb. 23rd.	Feb. 24th.	March 7th.	March 8th.	March 16th.	April 11th.	April 19th.	May 12th.
Nose...	+	0·5 mgm. of endotoxin.	+	1 mgm. of endotoxin.	0	2·5 mgm. of endotoxin.	–	–	0	–
Throat	+		+		+		+	+	+	+

Case 23.—Male, aged 11. Scarlet Fever, with Chronic Diphtheria Infection of the Nose and Throat.

Date.	Jan. 3rd.	Jan. 4th.	Jan. 5th.	Jan. 11th.	Jan. 13th.	Jan. 21st.	Jan. 22nd.	Jan. 30th.	Feb. 2nd.	Feb. 6th.	Feb. 9th.	Feb. 17th.	Feb. 23rd.	March 3rd.	March 16th.	March 23rd.	April 13th.	April 27th.
Nose ...	+	+	0·5 mgm. of endotoxin.	+	1 mgm. of endotoxin.	+	2 mgm. of endotoxin.	+	–	–	+	0	+	+	+	+	+	–
Throat...	–	–		–		–		+	+	–	+	–	+	–	+	+	–	–	+

Case 24.—Male, aged 14. Chronic Diphtheria Infection of the Nose.

The condition did not yield to endotoxin, although the dosage was large, but the infection ceased almost immediately when a necrotic turbinate bone was removed on March 10th.

Date.*	Dec. 26th.	Jan. 1st.	Jan. 2nd.	Jan. 9th.	Jan. 19th.	Jan. 22nd.	Feb. 8th.	Feb. 21st.	March 1st.	March 10th.	March 18th.	March 20th.	March 21st.
Nose ...	2 mgm. of endotoxin.	+	5 mgm. of endotoxin.	+	+	5 mgm. of endotoxin.	+	+	+	Turbinate bone removed.	–	–	–

* Sept. 8th to Dec. 24th, +.

In conclusion, we wish to thank Dr. Dale, of the Wellcome Physiological Research Laboratories, who kindly allowed the diphtheria endotoxin to be prepared for us; and also Dr. Meredith Richards and Dr. M. B. Arnold, the medical officer of health of Croydon and superintendent of the Borough Fever Hospital, for permission to publish these cases.

The diphtheria endotoxin was prepared by growing a virulent B. diphtheriæ on serum or blood-agar in Roux bottles, collecting the growth, washing it two or three times in sterile physiological salt solution by centrifuging so as to remove any adherent toxin, grinding the bacterial mass by the Macfadyen method in the presence of intense cold, and filtration of the ground mass through a Berkefeld filter. The filtrate forms the endotoxin and is standardised by the addition of sterile salt solution so as to contain 2 mgm. or 5 mgm. per c.c. It was found by one of us (R. T. H.) that this endotoxin solution was harmless to guinea-pigs and that it possessed considerable protective power against injections of living B. diphtheriæ.[1] One of us (A. T. N.) also injected himself with doses of 2 mgm. and 5 mgm. with the production only of the local reaction mentioned above.

[1] Proceedings of the Royal Society, London, B, vol. lxxxiv., 1911, p. 49.

RECENT ADVANCES IN OUR KNOWLEDGE OF HEART DISEASE.[1]

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IN responding this evening to your request to read a paper before your distinguished Medical Society, I intend to try to give a "bird's-eye view" of the newer cardiology, as it may be termed, and I shall be content if I can make clear some of its principal landmarks.

In the first place, let me try to answer the question, What help has it been to us? I would say that it has made us more clearly to understand that heart murmurs due to deformities of the cardiac valves may be of little account, and that a murmurless heart may be a dangerously damaged heart. It is true that we knew or believed this before, but our idea, I suggest, is now more concrete and our belief more rational. The newer cardiology has demonstrated, in short, that the point of prime importance is how the heart is doing its work; if well, then, say we, let it murmur as much as it likes.

Further, it has enabled us to discriminate between the irregularities of the pulse which in regard to prognosis are trivial and those which are grave. Formerly we had a vague idea that some pulse irregularities were of no special significance and others were serious, but one could hardly say in any particular instance to which category it belonged or give any valid reason for thinking it either trivial or serious. And this and much more we are glad to recognise we owe in large measure to the clinical work of my distinguished colleague, Dr. James Mackenzie.

The root idea of this newer cardiology resulted from the work of Gaskell, to whom the origin of the myogenic theory—a theory which harmonises and explains many diverse facts—must be ascribed. According to that theory the transmission of the cardiac contractions from one chamber to another, auricles to ventricles, is not, as you are aware, a matter of impulses along nerve tracts, but of waves along muscle bundles. The theory, however, does not exclude the functional importance of nerve cells and nerve fibres, in which the heart itself is so rich, but according to it the nerve element is secondary in importance. Shortly stated, the theory, as you know, supposes that the fibres of the myocardium produce and accumulate in their interior a "stimulus substance" which, when in sufficient quantity or under sufficient tension, causes the contraction of the heart fibres; this property of the myocardium we speak of as "stimulus formation."

At this point, however, it is desirable to take into account two special and peculiar attributes of the heart muscle: one is that when it is stimulated, by however strong or however feeble a stimulus, it contracts to the fullest extent of which it is capable or not at all; this has been called the "all or nothing" attribute. The second law is that during the heart's contraction the stimulus material is used up, and the muscle for an appreciable time is unable to contract in response to any stimulus, however strong; this gives rise to the "refractory period" of the cardiac cycle, and it corresponds in time with the phase of rest during which the stimulus substance is being reaccumulated. After the resting stage the second and third functions of the myocardium, "excitability" and "contractility" (whose names explain themselves) again become effective.

The fourth function is that of "conductivity," in virtue of which the contraction wave is transmitted from the contracting fibres to adjoining fibres, giving rise to the fully developed "contraction wave" which, starting from near the openings of the great veins into the right auricle—the representative of the sinus venosus of the lower animals—sweeps through the auricles and ventricles to the apical region of the heart, to end in the contraction of the musculi papillares. Fifthly, the heart muscle, like the skeletal muscles, has the property of "tonicity," through which the fibres are in a state of slight permanent contraction, even when the muscle as a whole is relaxed.

[1] A paper read before the York Medical Society.

These, then, are the five physiological properties of heart muscle: (1) stimulus formation, (2) excitability, (3) contractility, (4) conductivity, and (5) tonicity; and, as we know, each may be the subject of pathological variation, either alone or in association with others.

In the primitive cardiac tube and in the heart of the lower vertebrates the wave of contraction passes from one end of the tube to the other and from one chamber to another—sinus venosus, auricle, ventricle, conus arteriosus—by actual structural continuity of muscle fibres, but not so in man or the higher vertebrates, for, as you know, there is a non-muscular fibrous ring separating auricles from ventricles, breaking this continuity. Yet, as Stanley Kent and His, jun., were among the first to show, there *is* a medium of muscular continuity from auricle to ventricle—the auriculo-ventricular bundle, or bundle of His, or shortly "the bundle." This starts in a remnant of the primitive cardiac tube situated in the wall of the right auricle near the openings of the venæ cavæ—the "sino-auricular node." It passes as a narrow cord to the auriculo-ventricular junction and along the upper fibrous part of the interventricular septum, and then divides into two main branches, one going to the right ventricle and the other to the left, each eventually ramifying in the ventricular walls as the well-known Purkinje fibres.

During diastole, then, the stimulus substance accumulates in the fibres of the heart muscle, contraction starts at its most excitable part—the "sino-auricular node," or so-called "pace-maker" of the heart—and passes down the bundle of His to the fibres of the ventricle, giving first auricular systole and one-tenth of a second later ventricular systole.

Until later years we knew but little of the way any of the chambers of the heart were working excepting the left ventricle, and that mainly from the study of the radial pulse. Now, however, thanks to the possession of the polygraph and electrocardiograph, we are able to study the action of the right side of the heart as well as the left, and record their respective activities as permanent tracings. With the polygraph, to which I intend to refer almost exclusively in this paper, that is achieved by studying the waves in the jugular bulb synchronously recorded with those of the carotid and radial pulse or with the apex-beat. The jugular bulb, as you are aware, is situated behind the gap between the two heads of insertion of the sterno-mastoid muscle—the clavicular and the sternal—and it is really in direct continuity with the cavity of the right auricle. It is, indeed, a portion of that great auriculo-venous reservoir which is separated from the veins of the head and neck by the valves at the upper limit of the bulb and includes the liver and inferior vena caval system in the abdomen.

Let me now direct your attention in the accompanying composite diagram (Fig. 1) to the features of the normal radial pulse curve so well known to you all, and in doing so I may say that it forms a convenient standard in the analysis of jugular and other tracings as I shall shortly explain. A line drawn from the beginning of the upstroke marks the opening of the aortic valves; a second drawn at the dicrotic notch marks the closure of those valves; thus the space between the two lines corresponds with the time during which blood is flowing from the left ventricle into the aorta. This interval is often called the pulse, or "sphygmic" period.

If now you look at the curve of the pulse in the carotid artery you will see that it is similar in form to the radial curve, but that it differs in that its time relation to the ventricular systole is 1/10th sec. earlier, the wave taking that time to travel from the point of origin of the carotid artery to the wrist.

Look next at this curve of the apex beat, which, you will remember, is not a pressure curve like the others, but a representation of the movement of the chest wall transmitted to it by the movement of the ventricle. The picture is, however, not unlike the carotid or radial pulse curve, but the upstroke begins 1/10th sec. before the carotid upstroke. The aortic valves, you will recognise, are open during the crest of the wave alone; during the upstroke the ventricle is contracting so as to get up sufficient pressure to open the aortic valves. This interval of 1/10th sec. is known as the "presphygmic period" during which, as I have said, the ventricle is contracting without producing any impression on the blood in the arteries. You will notice, moreover, that before the main upstroke there is a small rounded wave; this is due to the distension of the ventricle by the blood pumped into it during the auricular systole, and it is known as the auricular wave of the apex curve.

Now let me direct attention to the normal venous pulse curve. If you look at the lower part of the neck where the skin covers the space between the two heads of attachment of the sterno-mastoid muscle, to the sternum and clavicle respectively, you will see in most healthy people, at any rate when recumbent, the venous pulsation referred to, a double flicker for each heart beat. What does it mean? The tracing of this movement shows first a rise owing to contraction of the auricle, called therefore the auricular or "*a* wave" of the venous pulse curve; then comes a fall as the blood passes from the auricle into the ventricle and from the jugular bulb into the auricle. This fall is interrupted, however, by a second rise synchronous with the pulse in the carotid, and probably largely due to the impact of the carotid expansion on the contiguous jugular bulb, and is consequently called the carotid or "*c* wave" of the venous pulse curve. The diastolic fall then continues. A few moments ago I said a double flicker could be seen at the root of the neck for each heart beat, but the two flickerings are not due to the *a* and *c* waves—these occur so close together that they cannot be detected separately by the human eye; the second flicker is due to a third wave now to be mentioned. During the ventricular systole the auriculo-ventricular valves are of course closed, and the blood continuing to pour into the auricle from the great veins accumulates in the auricle and jugular bulb and gives rise to the wave named the ventricular or "*v* wave" of the venous pulse curve, which is really, as you see, a stasis wave. There are other probable contributory causes of the *v* wave, but I do not intend now to discuss them. With the end of ventricular systole, the pressure in the ventricle and auricle being about the same, the auriculo-ventricular valve opens, and the blood being no longer dammed back in the auricle, the rise of the *v* wave is followed by its fall. Blood continues to pour continuously from the veins, during what is known as the period of joint diastole, fills ventricle and auricle, and the curve rises slightly and evenly until the pressure in auricle and ventricle is the same, when the auricle again contracts to give the next positive wave, the "*a* wave" of the succeeding cycle.

Now let me show you *how tracings of the jugular pulse are analysed*. (Fig. 2.) The first point to make out is, Which is the wave synchronous with the carotid pulse?—in other words, our landmark is the *c* wave. We know that the pulse appears in the carotid 1/10th sec. before it appears in the radial. If, then, we measure the space on the time record 1/10th sec., or half of one of the divisions being fifths of a second, and transfer this so as immediately to precede the beginning of the radial upstroke, this will give us the time on the radial tracing at which the beginning of the carotid upstroke occurs. We next measure from this point to the ordinate, or mark of the radial lever when at rest before the tracing began, or after it is ended, and transfer this measurement from the jugular ordinate along the jugular tracing, and that will mark the beginning of the *c* wave. Having got the *c* wave, and knowing that the time interval between the beginning of the auricular contraction and the appearance of the carotid pulse is 1/5th sec., we measure the space of one division of the time-marker back from the beginning of the *c* wave, and that will give the beginning of the *a* wave. The *v* wave is found by measuring the distance from the bottom of the dicrotic notch to the ordinate and transferring the measurement to the jugular curve; this is called the sphygmic period, and it ends at the apex of the *v* wave as in the tracings displayed.

That, then, is a normal venous pulse curve with a definite auricular *a* wave, and it is called *the auricular form of venous pulse* (Fig. 2). It is thus called because there is another form, *the ventricular form of venous pulse*, in which there is no *a* wave. The auricular form occurs, as I have said, in health and also in all forms of heart disease, except one. In that condition of the heart the auricle is distended or virtually paralysed, and acts merely as a reservoir just as the jugular bulb does. Originating no efficient contraction there is as a natural consequence no sign of an *a* wave. I show you an example of the *ventricular form of venous pulse*. (Fig. 3.)

It is sometimes possible to get tracings in the same patient of the passage of the auricular form into the ventricular form of venous pulse, and in the *a c v* stage, if it be a case of mitral stenosis, there is a presystolic murmur

with a crescendo accent; in the *c v* stage—that is, when the *a* wave is absent—there is no presystolic murmur for the reason that there is no contraction of the auricle taking place, but there may be a diastolic murmur which is distinguished by its being diminuendo in accent.

I now purpose, in the second part of my paper, to consider certain typical irregularities of the pulse, the significance of which I may say can hardly be duly appreciated without the study of the action of the right side of the heart by means of the venous pulse in conjunction with the study of the action of the left side of the heart by means of the pulse in the systemic arteries. I intend also to briefly refer to the value in prognosis and treatment that such a study possesses.

Although I shall incidentally say something about irregularities in the rate of the pulse it is to the irregularities in rhythm—the true arrhythmias—that I wish especially to refer. Allow me to enumerate some of them. They are (1) a youthful irregularity known as sinus arrhythmia; (2) an irregularity more characteristic of the aged, known as premature contraction of auricle or ventricle, or otherwise, as "extra-systole"; (3) a complete irregularity of the pulse, the *pulsus perpetuus irregularis* characteristic of the condition known as auricular fibrillation; (4) the alternating pulse, first a relatively big and then a relatively small beat in recurring succession known as "pulsus alternans"; and lastly (5) an infrequent pulse, or pulse with lengthened pulse periods indicating partial or complete heart-block, and due to failure in or interference with the conducting power of the bundle of His.

First, then, as to the irregularity known as *sinus arrhythmia*. You know that the sinus venosus is normally the most excitable part of the heart, and that the sino-auricular-node is, indeed, the pace-maker of the heart; when nervous impulses transmitted through the vagus act in an unusual way the pace may vary, and the result is an irregularity of time, but not of force. You remember that Czermak, who had a cartilaginous tumour in his neck, could produce slowing of his heart by pressing on the nodule so as to stimulate his vagus; also that "standstill" of the heart is easily produced in animals by experimental stimulation of the vagus; further, that in children and nervous individuals a rhythmical slowing of the heart is sometimes met with coinciding with the respiratory phases of expiration and inspiration, a slowing which is attributed to reflex vagal stimulation. A similar slowing is a not unusual occurrence during the act of swallowing, and it is a corresponding alteration in rate which is known as this neurogenic irregularity or sinus arrhythmia. The slow beats may occur with inspiration and the rapid beats with expiration, or conversely. I show tracings of the condition (Fig. 4), and you will see that the force of the heart beats remain the same, but the length of the diastolic pauses varies.

It is not infrequent to find this variation occurring in association with emotional changes, particularly, perhaps, apprehension or anxiety. Such an irregularity, which more often than not is seen in the earlier periods of life, is easily recognised on feeling the pulse by getting the subject to breathe deeply or to make more or less vigorous muscular exertion, when it vanishes. It is also generally abolished by the administration of belladonna, or in a few minutes by the hypodermic injection of atropine. Venous tracings show that the whole heart participates in the time alteration, inasmuch as the auricular beat keeps time with the ventricular beat, as you see in the tracing. In children, at any rate, the slowing is sometimes accompanied with subjective sensations of giddiness or faintness which may cause a good deal of unnecessary alarm to parents and friends. The condition has, indeed, no serious pathological significance and, in fact, when it occurs, as it often does, after an acute illness or pyrexial attack it is rather a good sign than a bad one, for as a matter of experience it is known that it does not appear if the heart's contractility is materially impaired. It is almost invariable in the healthy dog, and is immediately abolished by section of the vagus, as it is by paralysis of the vagus with atropine in the human subject. It affords no indication for treatment and none is required. So much for what may be called the "youthful irregularity" of the pulse.

The second form of irregularity to which I shall refer is also of no pathological importance, in the majority of instances at any rate, and although it occurs at any period of life it may fairly be called the "irregularity of the aged." It is known as "*extra-systole*" and is due to a premature contraction in ventricle or auricle. (Fig. 5.) It often alarms the subjects very much because they are conscious of the irregularity. After a period of normal and regular pulse-beats a small pulse-beat occurs earlier than it should, and then in order to catch up the normal rhythm a long pause occurs. During this long pause the heart accumulates an abnormal supply of contractile energy, and the succeeding beat is larger than normal, as you will see in the tracings. It is the pause followed by the big beat that arrests the patient's consciousness and gives rise to the not unusual alarm. It is easily recognised on auscultation by hearing the first and second sounds sooner than ordinary, of feeble sound value, and succeeded by a long pause. Often, of course, there are no subjective sensations, but often, also, the patient may feel a momentary giddiness and a sensation described as if the heart had stopped or rolled over, followed by a thump. In many cases it has no prognostic significance, or, expressed in other ways, extra systoles may be present in cases in which from any other evidence there is no ground for assuming an unsoundness of the heart-muscle.

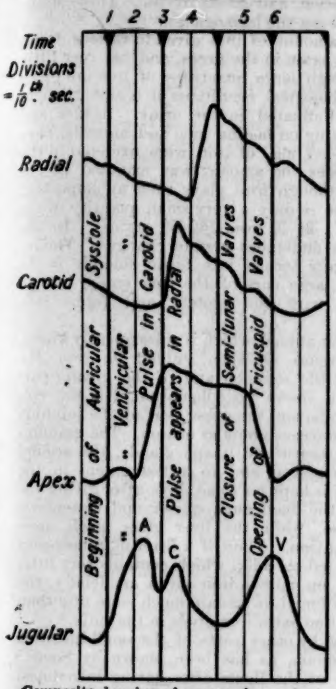
In the third place I ask your attention to an arrhythmia in which the irregularity of the pulse is complete, no two waves being alike—big and little, short and long being intermixed without apparently any rhyme or reason. It is the *pulsus perpetuus irregularis*, or what in the older days was called the "mitral pulse." This pulse, of which I show tracings (Fig. 6), as you know and see, is not only very irregular, but usually also very rapid and small. In an exaggerated phase it has been known as *delirium cordis*. I may say that over 50 per cent. of all irregularities of the pulse are of this type. It is only comparatively recently that the real significance of the old-time "mitral pulse" has been recognised. It has been shown conclusively that it is due, as you know, to irregular and multitudinous stimuli originating in the auricle, some alone of which pass to the ventricle to be represented in the arterial pulse wave. The auricle is, in fact, virtually paralysed, acting merely as a receiving chamber, but on inspection in the lower animals its walls may be seen in a condition of endless tremor that has been compared to the fibrillary tremor of the tongue in bulbar paralysis, and hence called *auricular fibrillation*, and in the human subject it may be found either with or without valvular lesions, in cardio-sclerosis or typically in mitral stenosis.

When it is present continuously, or during a paroxysm merely, the crescendo presystolic murmur of mitral stenosis, as I have already stated, is in abeyance, for there is no auricular contraction to cause it, correspondingly the venous tracing shows no *a* wave; there is present the ventricular form of venous pulse. (See Fig. 3.) But almost invariably both in the venous pulse curve during diastole of the ventricle and in the electrocardiogram there are numerous small waves—the so-called fibrillation waves—which are taken to be objective evidence of the numerous ineffective movements of the auricular wall. Although there is no longer a presystolic murmur, rough, crescendo, and running up to the accent of the first sound, there is often, as I have also already stated, a diastolic murmur diminuendo in character and separated from the first sound by a distinct interval.

Auricular fibrillation is easily produced in animals by faradic stimulation, but it means in man a serious damage to the muscular wall of the auricle. It is, however, a hopeful sign, in the non-degenerative cases at any rate, in so far that digitalis and its congeners are almost always successful in obviating its bad results. The rapid, irregular pulse under the action of digitalis may in the rheumatic cases be counted on to become slow and regular (see Fig. 6, tracings 2 and 3), and the patient makes a good recovery—a recovery, however, which is often only maintained while the digitalis action is kept up. The suggestion is that digitalis produces a condition of partial heart-block in the bundle of His whereby a multitude of irritating impulses are prevented from passing to the ventricle, and hence it has time to rest and gain strength. In such patients digitalis, or a drug of its group, should be given more or less continuously throughout life in a dose the optimum size of which is a matter of investigation for each individual patient.

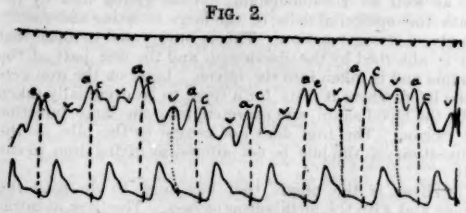
A fourth irregularity is that known as the *alternating*

FIG. 1.



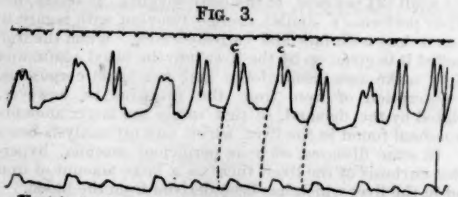
Composite drawing of curves of apex beat, and radial, carotid, and jugular pulses.

FIG. 2.



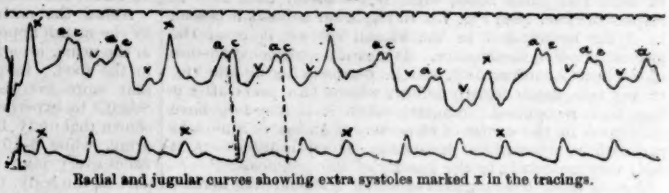
Tracing to illustrate the analysis of the normal jugular pulse. A, Wave due to auricular systole; C, Wave due to carotid impact; V, Stasis wave. An example of the "auricular form" of venouspulse to compare with Fig. 3.

FIG. 3.



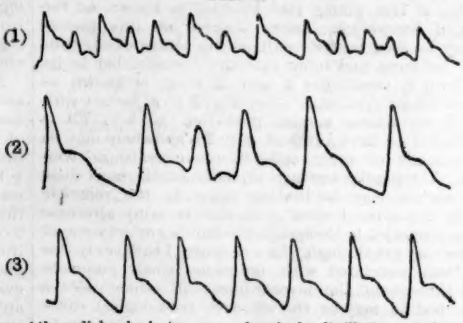
Ventricular form of venous pulse to compare with the above. Showing absence of any A wave and complete irregularity of the radial pulse. (From a case of auricular fibrillation.)

FIG. 5.



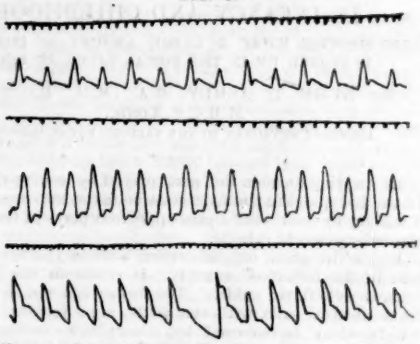
Radial and jugular curves showing extra systoles marked x in the tracings.

FIG. 6.



Tracings of the radial pulse in two cases of auricular fibrillation. *Pulsus perpetuus irregularis:* (1) from a case of rheumatic mitral stenosis; (2) from a case without valvular lesion; (3) from the same case (2) after treatment with digitalis.

FIG. 7.

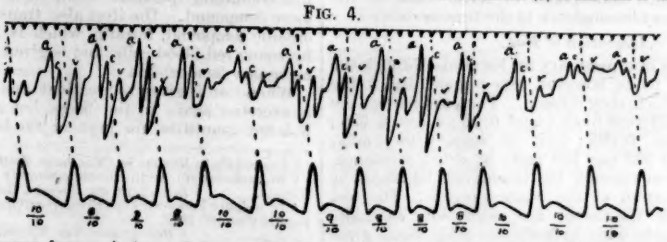


Tracings of the radial pulse from three patients with "pulsus alternans." In the third the alternation is seen to be accentuated after an extra systole.

FIG. 8.

Tracings showing complete heart block. Two or three contractions of the auricle (A) to one beat of the radial pulse.

FIG. 4.



Radial and jugular curves from an instance of sinus arrhythmia; pulse periods, altering with respiration, marked in 1/10th sec., and varying from 10 10 to 8/10ths.

pulse or *pulsus alternans*. It consists of a regular alternation of large and small beats, with, however, an even rate in respect of time. (See Fig. 7.) In the lower animals it is seen in dying hearts, and in the human subject it is of the gravest possible significance. It means a serious exhaustion of the heart's contractility, and in persons after middle life, at any rate, death usually follows within two years after it has been recognised. Similarly when it is found to have developed in the course of an acute inflammatory illness, as pericarditis, myocarditis, pneumonia, or septic infections, it adds very materially to the gravity of the prognosis.

Among other irregularities to which I should like to refer one is really an irregularity in time. It is the infrequent pulse due to some impairment in the conducting power of the bundle of His, giving rise to what is known as the condition of *heart-block*. Lesser degrees of this phenomenon may be seen as the result of the action of digitalis and after influenza and other infective diseases, but in its extreme form it constitutes a part of what is known as the Stokes-Adams syndrome. (See Fig. 8.) A patient with this condition, whose normal pulse-rate is, say, 70, is suddenly found to have a rate of only 30, and there may be fainting attacks or even epileptiform convulsions concurrently. The jugular tracings or electrocardiograms show that the auricle may be beating twice to the ventricle once, as in the curve I show you—that is, every alternate auricular contraction is blocked in the bundle, or only one of every three may get through. In a necropsy I saw lately this blocking was associated with numerous small gummata scattered throughout the myocardium; in other cases a rheumatic nodule may be the effective pathological cause of the condition.

Harley-street, W.

THE RELATION OF IRON TO ANÆMIA IN INFANCY AND CHILDHOOD;

ALSO SHOWING WHAT A LARGE AMOUNT OF IRON THERE IS STORED UP IN THE FŒTAL LIVER AT BIRTH.

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IN studying anæmia the part played by iron in the blood, in the body, and in the food must be taken into account, and I will try to show what a great part iron plays in the body of the unborn and of infants.

Iron is the great oxygen-carrier both in the earth's crust and in the bodies of animals. It exists in the earth as ferrous and ferric oxides. The former is a strong base and forms neutral salts with the acids, e.g., ferrous silicates, which when decomposed by atmospheric carbonic oxide yield ferrous carbonate. This latter is soluble in water containing carbonic oxide, and is distributed all over the earth. As soon as it comes into contact with atmospheric air it is oxidised to ferric oxide, and the carbonic oxide is set free and returned to the atmosphere. The ferric oxide, when it comes into contact with decomposing organic matter, is reduced, and ferrous carbonate is again formed and carried off by water until it again comes into contact with air and helps to oxidise vegetable and animal refuse.

Iron is thus an indefatigable oxidising agent; it plays the same part in an organism as it does in the earth's crust, and is the great oxygen carrier. In the body the iron exists in the state of a complex organic compound, the hæmoglobin, which forms a loose chemical compound. This is the oxyhæmoglobin, which corresponds to ferric oxide in the earth, and the reduced hæmoglobin to the ferrous oxide.

Absorption of Iron.

The body gets the iron necessary for its needs through the food; the different foods, however, vary a good deal in the amount of iron which they contain. Thus comparing the amount of iron in different foods: beef, 0·02; wheat, 0·026; potato, 0·042; peas, 0·024; yolk of eggs, 0·04; milk, human and cow, 0·003 per 100 parts of dried substance. The course of the iron through the tissues can be traced by histological examination of the stained organs. The test stains for iron in the tissues are ammonium sulphide, potassium ferrocyanide with hydrochloric acid, which gives the Prussian blue reaction, and hæmatoxylin. These stains all colour the iron and not the hæmoglobin.

Almost the entire amount of iron given in various forms by the mouth appears again in the fæces, and but very little in the urine, even though large quantities of iron are given in the food. In pathological conditions it is said, though, that more iron is eliminated in the urine. Bedder and Smidt,[1] by experimenting on fasting men and animals, have shown that only 1·4–1·7 mg. of iron were excreted in the urine, while 6–10 times the amount was excreted in the fæces every day. Although iron plays such an important part in the body, there is only a very small quantity in the body altogether—viz., 2½–3½ grm. (40–55 grains). In the alimentary canal iron undergoes certain changes. The inorganic salts are largely turned into ferric chloride in the stomach, but soon a large part of the iron enters into an organic combination with the protein and forms iron albuminate.

If iron be given to an animal, which is subsequently killed, and if the various organs are then stained for iron, the mucous membrane of the stomach and of the greater part of the small intestine shows no colouration, but the epithelium of the duodenum and the upper part of the jejunum is found to contain numerous granules of iron. The granules may be traced to the mesenteric lymph glands, also around the corpuscles of the spleen, and to a less extent in the liver.[2] If the animal is kept for some days after giving the iron, the reaction in the duodenum, spleen, and mesenteric glands is less intense, while the liver gives much more evidence of containing iron. Thus, if a litter of guinea-pigs are taken and some fed on milk, which contains very little iron, and others fed on milk + iron given artificially, the livers of the latter are found to contain much more iron than the former, which had no extra iron given in the milk.[3]

Iron can be absorbed by other parts of the small intestine other than the duodenum, as has been shown by Socin,[4] who ligatured a piece of the ileum after having introduced into it a large quantity of iron. Within a few hours all the iron had disappeared, showing that the ileum can take up iron as well as the duodenum. After giving iron by the mouth the epithelial cells of the large intestine and cæcum also give a strong reaction. This is interpreted to mean that iron is absorbed by the duodenum and the first part of the jejunum and is taken into the spleen. Later on the iron gets to the liver, where it rests for a time, to be eventually taken up by the blood again and excreted into the large intestine and cæcum. The iron does not escape by the bile, as the composition of the bile is not altered by giving iron to the body.

The liver is the organ that has most to do with the storage and with the metabolism of iron. The liver in intrauterine life receives a very good blood-supply by means of the branches of the umbilical vein carrying arterial blood from the placenta. At birth the liver forms from 4–5 per cent. of the body weight, which is twice the corresponding weight in the adult (2½ per cent. of the body weight). It seems that the liver performs a similar storage function with regard to iron as it does with fats and carbohydrates. When the iron is needed it is given up by the liver into the blood again, and used to make new hæmoglobin and red blood corpuscles. The absorption of iron from the intestine is, however, regulated by the demand, so that rarely are larger amounts than normal found in the liver, which fact my analysis bears out. In some diseases, such as pernicious anæmia, hypertrophic cirrhosis of the liver, there is a large amount of iron found in the liver which has been derived from the blood.

The liver has also other functions in connexion with this iron. Together with spleen it separates the iron from effete iron-containing pigment which it stores in the form of a loose compound. The liver also transforms this iron into an organic compound, ferratin, which is ready for assimilation by young red blood cells, and is given out as it is required to make new hæmoglobin.

When iron is given to a patient much the greater quantity is excreted again in the fæces, but at times it appears as if large quantities are kept in the body.[5] Thus a patient

[1] Das Sekret in Resorp. in Dünndarm, Zeitschrift für Biologie, 1892.
[2] Eisenresorptum, Archiv für die gesammte Physiologie des Menschen, Kunkel. [3] Zeitschrift für Chemie, Gottlieb, 1891.
[4] In welcher Form wird das Eisen resorbiert, Zeitschrift für die angewandte Chemie, 1891.
[5] Honigmann, Van Noorden, vol. i.

with an ileo-cæcal fistula was given 416 mg. of iron citrate in two days, but only 338 mg. ever appeared in the fæces at the fistula.

Iron Stored in the Liver of the Fœtus and Infant.

As the liver has such a large blood-supply and is such a large organ in proportion to the body in infancy, it is not surprising that it should have a store of iron at birth and that it should regulate the supply of iron to the body. During a healthy pregnancy, which Bar[8] defines as "fetus sanus in matre sana," the mother has the power of extracting from her food all the materials required for the growth and development of the fœtus, and she in no way suffers by this self-sacrifice to the fœtus. During the last three months or so of intra-uterine life a store of iron is laid up in the liver, so that the infant when born starts its life with a good supply of iron in order to supply the needs of the hæmoglobin and red blood cells, which are to be formed as the infant grows. The necessity for this store of iron is made apparent when it is understood what a very small amount of iron there is in milk (7–14 times as little iron as in any other food), and when it is remembered that normally an infant has no other food than breast milk for 8–9 months at least, and often for much longer than this. This store of iron, which the infant starts life with, has thus to last till it can take food other than milk, and so obtain a sufficient amount of iron. If the store of iron is too small to start with, or if it gives out, then the infant will become anæmic for lack of iron if none is given in its food.

In deciding the question of man's need for inorganic salts, including iron, we must distinguish between the growing and the adult body; the former requires a considerable quantity of inorganic salts, and much more than the adult in proportion to its weight in order to keep up with the development. Now all the inorganic salts are supplied to the infant in sufficient quantities, except the iron, as can be proved by comparing the ash of a new-born puppy with the ash of a bitch's milk.

	K_2O	Na_2O	CaO	MgO	Fe_2O_3	P_2O_5	Cl
Puppy	11·42	10·64	29·52	1·82	0·72	39·42	8·35
Milk of a bitch ...	14·98	8·80	27·24	1·54	0·12	34·22	16·90

All the constituents of the puppy and the milk which it receives thus closely correspond, and the puppy gets enough of each salt with the one exception, iron.[7] There is thus six times as much iron in the puppy as in the milk, and to get over this difficulty there is laid up in the livers of the young animals a store of iron to carry them over the time when they have no food other than milk. This iron laid up at birth is gradually used up, as can be shown by analysing the livers of different animals during the suckling period. Thus, if we take a litter of young rabbits and analyse them at different ages, we can see how the iron gradually diminishes from birth up to about the end of three weeks. When the rabbit is three weeks old it can take food other than milk, and the iron is gradually increased again in its body. The following table[9] shows the rabbit's age and the amount of iron in mg. to 100 grm. body weight.

Age.	Iron.	Age.	Iron.
Birth	18·2 mg.	*22 days	4·3 mg.
4 days	9·9 ,,	24 ,, ...	3·2 ,,
7 ,, ...	6·0 ,,	27 ,, ...	3·4 ,,
15 ,, ...	4·5 ,,	41 ,, ...	4·5 ,,
17 ,, ...	4·3 ,,	46 ,, ...	4·6 ,,

* Able to take food other than milk.

On the same analogy we can show that those animals which are suckled the longest have the largest supply of iron laid up, and this is shown rather well when we compare rabbits with guinea-pigs. Rabbits have a larger amount (three times as much) of iron stored up compared with guinea-pigs. Young rabbits at birth are blind and quite incapable of looking after themselves or of taking any food other than milk from the mother. Guinea-pigs, on the other hand, at birth are able to run about and eat iron-containing food such as grass, as well as take the milk from the mother. Rabbits must, then, have a supply of iron to last them for three weeks, at which time they can come out of their nest and take green food. Guinea-pigs feed at once and thus do not need this supply of iron. In the same way there are 10 times as much iron in the new-born calf as there is in the grown-up cow, and the iron can be demonstrated easily in the liver of a calf one week old.[9]

In the same way we can prove that the human infant has a large store of iron laid up at birth in the liver which has to last for 8–9 months or until the child can take food other than milk. This poorness of iron in milk shows us that milk should not be the only food given to an infant after weaning or, if possible, too exclusively in the diet of persons inclined to be anæmic. The young animals and the human infant get the supply of iron from their mothers, and it has been proved by Bunge[10] that female cats when near maturity have an increase of iron in their livers, and at all times have more iron than male cats. On the same analogy, we should expect the human female to have more iron than the male, especially during the period liable to gestation.

Experimental Work on the Iron in the Liver.

To prove that iron is stored up in the liver, and to find out in what quantity this iron does exist at the different ages, I have obtained a number of livers. These livers have come from children of all ages and from children suffering from different diseases, and they have been examined in microscopical stained sections for iron and also quantitatively analysed for iron. As the livers in most cases contain only a small amount of iron the demonstration of the iron takes a good deal of care and patience, both to show it in the stained preparations and also to estimate the quantity.

The iron in the liver exists as an organic compound, combined with protein; the iron albuminate and this organic compound does not stain by the ordinary methods for iron, such as ammonium sulphide or by potassium ferrocyanide and hydrochloric acid. To demonstrate the iron it must be changed from the organic to the inorganic state or, as it is called, unmasking the iron. In some diseases, such as pernicious anæmia and hypertrophic cirrhosis of the liver, it is already in a state of inorganic iron and can thus be stained at once, and is seen to be in a large quantity by the depth of the stain taken by the sections. Glass rods and glass instruments for manipulating the sections have been used in all stages, so that iron could not be introduced in any way, as it might be if iron needles had been used.

The livers used for the sections have all been hardened in weak alcohol and not in formalin, as the iron for some reason or other seems to be more easily demonstrated when alcohol has been used. The sections have been cut with the freezing microtome, and then the iron in the sections unmasked by placing them for 24–48 hours or even longer if necessary in acid alcohol, which consists of H_2SO_4 = 4 parts; alcohol 95 per cent. = 100 parts. In some cases Delépine's method has been used, which consists of placing these sections in proof spirit 2, glycerine 1, for 24 hours. The sections are then washed in pure alcohol, then in distilled water, and then stained by ammonium sulphide or by potassium ferrocyanide and hydrochloric acid.

When staining with ammonium sulphide the sections are put in a watch-glass full of the stain and left for 30–60 minutes. If no colour results the stain may be warmed, when often the sections take a faint grey-black shade if there is a small amount of iron. The advantage of this stain is that it is easy to see what amount of iron there is by the shade of colour (grey-black) the sections take, and in this way different livers may be compared. The sections are mounted in Canada balsam and they keep the stain. The disadvantage of the stain is that the smell is so disagreeable.

The other method is to stain the sections, after unmasking the iron, with a 2 per cent. watery solution of potassium ferrocyanide for some minutes, and then to transfer them to 1 per cent. hydrochloric acid, when the iron takes a blue colour (Prussian blue reaction). If there is only a small amount of iron the intensity of the staining I have found to be increased by warming both the ferrocyanide and the acid and by transferring the sections several times from the one to the other. The great

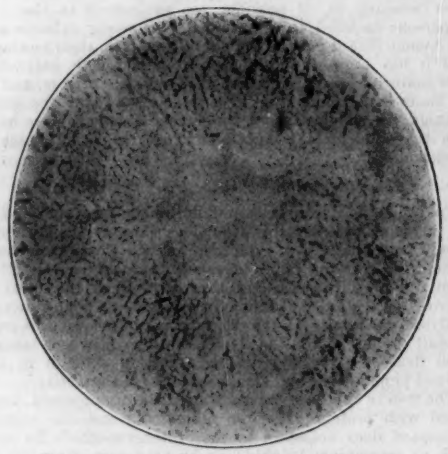
[8] Bar: Leçons de Pathologie Obstétricale, Paris, 1907.
Bunge: Zeitschrift für Physiologische Chemie, 1885, Band 9
[7] Bunge: Ibid., Band 17, 1893.

[9] Lapicque: Archiv für Experimentelle Pathologie und Pharmakologie Band xli.
[10] Bunge: Zeitschrift für Physiologische Chemie, Band xvii., 1893

disadvantage of this method is that the colour is not permanent for more than a day or two.

Sections from a normal liver take very little or no stain even when stained with ammonium sulphide and looked at against a light background, by which means a very small quantity can be seen. On the other hand, sections from a liver of a full-time fœtus (Fig. 1), in which craniotomy

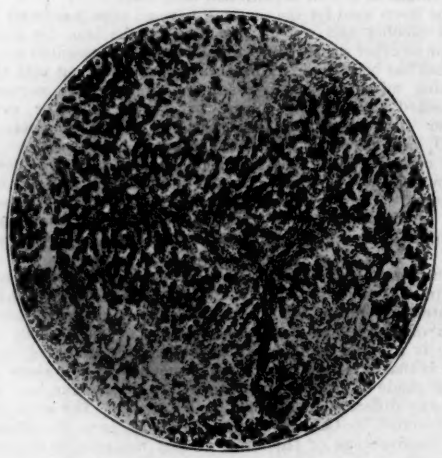
FIG. 1.



Section from a full-time fœtal liver stained with ammonium sulphide.

had to be done to deliver the child, gave a very much more definite colour, as did most of the sections from livers of babies up to one year, thus showing that they contain more iron than the adult livers. Sections from a pernicious anæmia (Fig. 2) and a hypertrophic cirrhosis liver gave very intense colouring, as would be expected. The iron

FIG. 2.



Section from a pernicious anæmia liver, stained with ammonium sulphide.

appears as granules, stained grey-black, in the acini at the periphery of the lobules.

Quantitative Estimation of the Iron in the Liver.

I have estimated the amount of iron in 21 livers; they represent different ages, starting from that of a baby at birth and passing up to adult livers. The livers have come from cases of various diseases, including some of the anæmias such as pernicious anæmia and a spleno-medullary leucocythæmia. To act as a standard I have analysed two normal livers. The livers have all been kept and hardened in very weak formalin, which has the effect of preserving the livers well and not causing them to become so hard as the stronger solutions make them.

The method of estimating the iron has been as follows. All the livers contained the same amount of moisture, as they were all put in the same strength of formalin, straight from the post mortem, and thus the amount of iron in each can be compared. A piece was cut out of each liver, dried in a cloth, and weighed in a porcelain crucible. No iron instruments or dishes were used, as iron might thus be introduced. The piece of liver was then burnt to ash in the crucible over a Bunsen burner, which takes on the average about 30 minutes. The crucible and the burnt ash of the liver are then weighed again and the weight of the ash found, as the weight of the crucible is known. The weight of the dried residue generally came to about 1/20th of the piece originally taken, which means that the livers contained about 95 per cent. of water.

The dried ash is then covered with aqua regia (hydrochloric acid 3 parts and nitric acid 1 part) for 24 hours and heated at intervals. At the end of 24 hours the whole is evaporated to dryness and the iron is left in a state of Fe_2O_3 mixed with the dried carbon. Water is then added and the iron becomes dissolved out from the black charred remains. The solution is then filtered and the filtrate titrated against a standard solution of potassium permanganate. The strength of potassium permanganate used has been centinormal N/100 diluted five times, making it N/500. Now 1 c.c. of N/100 potassium permanganate = 0·000794 grm. of Fe_2O_3. As we know how much liver we started with we can easily calculate the amount of iron in each piece of liver, and so find the percentage in the whole liver.

A shorter method than this, but one which I did not find so successful on account of the livers being hardened in formalin, is to dissolve the piece of liver in nitric acid, which is boiled up and evaporated, leaving the iron as iron nitrate. Strong sulphuric acid is then added, and the iron turned into iron sulphate. This is then evaporated and the residue dissolved in water. Zinc is then added to the solution, and the iron turned from the ferric to ferrous state. The formalin seems to upset the titration with the potassium permanganate, so that this method was given up, although it answered with livers preserved in alcohol.

Table of the Livers Analysed for Iron.

No.	Age.	Disease.	Weight of liver taken (in grammes).	Percentage of iron.
1	Adult.	Normal (accident case).	12·0	0·011
2	,,	,, ,, ,,	16·4	0·014
3	,,	Fatty liver.	15·7	0·007
4	Full time fœtal.	Craniotomy case.	12·0	0·058
5	2 months.	Gastric spasm.	16·82	0·05
6	10 weeks.	Foundling, marasmus.	14·7	0·041
7	,, ,,	Marasmus.	10·72	0·031
8	3 months.	Congenital syphilis.	17·5	0·031
9	,, ,,	Marasmus.	19·27	0·03
10	,, ,,	Broncho-pneumonia.	19·03	0·03
11	7 months.	Epidemic diarrhœa.	11·35	0·013
12	18 months.	,, ,,	10·08	0·029
13	3 years.	Ectopia vesicæ, post-operation.	14·2	0·025
14	8 ,,	Tuberculous peritonitis.	20·2	0·004
15	7 ,,	Hodgkin's disease.	17·3	0·006
16	12 ,,	Rheumatism; pericarditis.	15·12	*
17	,, ,,	Spleno-medullary leucocythæmia.	18·7	0·022
18	Adult.	Pernicious anæmia.	17·15	0·05
19	,,	,, ,,	17·37	0·12
20	,,	Hypertrophic cirrhosis.	17·0	0·13
21	,,	Atrophic ,,	12·6	0·01

* Too small amount to be accurately estimated.

The result of these estimations shows that, as in animals, the human being has iron stored up in the liver at birth to last while it is being fed on the milk, which is almost devoid

of iron. The full-time fœtal liver contained five times as much iron as the adult liver, and as much as one of the pernicious anæmia livers, but less than the second pernicious anæmia. Most of the livers from the children contained more iron than the adult ones, but the iron in the livers of the infants gradually diminishes as they grow up, which would be expected.

The liver of the rheumatism case contained practically no iron, a fact that is interesting when it is known how pale the child was and that she died from the effects of rheumatism with peri- and endocarditis. In this case there must have been a great destruction or else an inhibition of the renewing of the red blood cells. The case of Hodgkin's disease, where there had been anæmia for some long time, also had very little iron; on the other hand, the splenomedullary leucocythæmia, which had great anæmia, contained a fair quantity of iron. These last two cases had had large quantities of iron given them during the disease, but it must have been nearly all eliminated as soon as it was taken, or, at any rate, not stored in the liver.

The two cases of pernicious anæmia contained a large quantity of iron, which was in the form of inorganic iron, unlike the other livers, and the iron could thus be stained at once without unmasking. The case of hypertrophic cirrhosis also contained a large quantity, and after the piece of liver had been burnt away in the crucible the iron could be seen quite clearly as a red residue. No doubt the iron in pernicious anæmia is in a state so that it cannot be used, or else the body is unable to use it for some reason.

Manchester.

AN IMPROVED CLASSIFICATION FOR CASES OF PULMONARY TUBERCULOSIS,

WITH A VIEW TO COMPARATIVE STATISTICS.*

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WHENEVER we try to determine the value of any particular method of treatment in pulmonary tuberculosis, or attempt a comparison in this disease between one health resort or institution and another, we feel the need of an adequate system of statistics. This should give an accurate clinical picture of the case in broad outline on admission and at definite intervals of time. Progress in pulmonary tuberculosis depends both on the nature of the local changes in the lungs and on the degree of constitutional disturbance, and even a short clinical experience shows that the physical signs may be ill-marked, while the general symptoms are severe or *vice versâ*.

Most of the classifications in use in Europe are, however, based solely on anatomical considerations, and a classification which includes the degree of constitutional impairment has not yet been generally adopted, although the importance of such changes has been recognised and mentioned by many of the foremost authorities both in Europe and elsewhere.

The classifications most widely employed in Europe are (1) the Turban, or (2) Turban-Gerhardt, (3) those of the German Imperial Board of Health, and (4) the Hanseatic League. These are all based solely upon anatomical pathological considerations, although in the Turban classification amongst the addenda a maximum temperature of over 38·5° C. is accepted as indicating high fever.

The best American classification is probably that of the American Medical Association, which divides cases into three classes, partly from constitutional, partly from pulmonary indications. The following is a brief synopsis of this classification. Cases on admission are classed as *incipient* if there are slight or no constitutional symptoms (including particularly gastric or intestinal disturbance or rapid loss of weight); slight or no elevation of temperature (never over 100·5° F. per rectum or 100° F. by mouth); maximum pulse-rate not over 90; expectoration not more than 30 c.c. in 24 hours; slight infiltration, limited to the parts above the clavicles and third dorsal spinous process if both lungs are affected, to the part above the second rib in front if one lung only is affected, or to a small part of one lobe (60 to 80 square centimetres or two intercostal spaces); and no tuberculous complications.

More serious cases are classified as *moderately advanced* if there is no marked local or constitutional impairment of function (dyspnœa on exertion, weakness, anorexia, tachycardia); localised consolidation of half a lobe or less (one or both lungs being affected), sharply defined, with slight or no evidence of cavity formation, and no serious complications.

In the third class, the *far advanced*, are included those with marked constitutional or local impairment of function and marked consolidation of an entire lobe, or disseminated areas of beginning cavity formation, or serious complications.

Miliary tuberculosis is classed separately.

There are two great objections to this classification. 1. Although both physical signs and symptoms are taken into account, there is no indication as to the relative share taken by each of these. Cases with severe constitutional disturbance and slight pulmonary lesions would be placed in the same class as those with moderate constitutional disturbance and more extensive pulmonary lesions. 2. The third class is unduly large.

Proposed Classification.

A much better classification could be made by a slight modification of the Turban-Gerhardt system, which would only involve the addition of one more narrow column in a general summary.

If cases were classified not only by local findings, but also by the chief constitutional changes, the latter could be indicated by adding the letters A, B, and C, to each Turban-Gerhardt class. Cases with tuberculous complications should be classed apart; but as it would be useful for some purposes to know not only the nature of the complications, but also the physical signs and general symptoms, these cases might be classified like uncomplicated cases, and designated as regards constitutional impairment by a double letter, Ad, Bd, or Cd.

I would suggest as a basis for the constitutional classification to take the temperature, pulse-rate, and weight, making the points of division for temperature at 38° C. (like the American Medical Association) and 38·5° C. (as in the addenda to the Turban classification); for pulse-rate at 90 and 120; loss in weight, being less important, might be subdivided at 10 or 15 kilogrammes.

Any case, then, in which the temperature was not over 38° C. per rectum, the pulse-rate not over 90, and the loss of weight on admission not over 10 kilogrammes would fall into the A class of *slight constitutional impairment*. Any case with temperature over 38·5° C., or pulse-rate over 120, or loss of weight on admission over 15 kilogrammes would fall into the C class of *severe constitutional impairment*. Intermediate cases would be placed in the B class of moderate constitutional impairment.

Table of Classification.

	A.	B.			C.		
		(a)	(b)	(c)	(a)	(b)	(c)
Maximum temperature	Not over 38°.	38·1–38·5.	Not over 38.	Not over 38.	Over 38·5.	Not over 38.	Not over 38.
Pulse-rate...	Not over 90.	Not over 90.	91–120	Not over 90.	Not over 120.	Over 120.	Not over 120.
Weight loss	Not over 10 kg.	Not over 10 kg.	Not over 10 kg.	10–15 kg.	Not over 15 kg.	Not over 15 kg.	Over 15 kg.

For inclusion in the A class all three criteria must be favourable. In the same way if one of these exceeds the limits of the B class the case falls into the C class. Possibly in practice it may be found that every case with heavy loss of weight will also have a high pulse-rate or a much-raised temperature; in which case the table might be simplified by the omission of weight loss as a criterion.

Although everyone must admit the importance of gastro-intestinal disturbance in prognosis, cases with marked

* A paper read at the International Tuberculosis Congress, Rome, 1912.

digestive impairment should, I think, be classed as "complicated," to avoid the necessity of too many criteria in classification. These digestive disturbances are rather indefinite; they vary within a short space of time, are markedly influenced by treatment, and cannot easily be divided into degrees of severity. For these reasons I think slight digestive disturbances should be ignored in classification, severe or persistent disturbance of this kind reckoned as a complication.

Remarks on Methods.

Precautions as to temperature taking.—In order to avoid the disturbing effects of the journey to the sanatorium or health resort or of occupation, it is advisable to keep patients in bed in every case for the first week, as already done in many sanatoria, and to disregard the first three days. The case would be classified according to the maximum temperature in the last four days of the first week. During these days, at all events, the temperature should be recorded not less than four times a day.

The method of taking temperatures should always be stated. Personally, I am of opinion that for such purposes rectal thermometry is necessary, and it would be as well to adopt a uniform time of five minutes, irrespective of the kind of thermometer used, as this would ensure a greater degree of accuracy with relatively insensitive thermometers. If it is not possible, for any reason, to take the temperature per rectum, and mouth temperatures are taken, we must give time for the mouth cavity to be warmed up, and prevent loss of heat by wrapping up the face, the thermometer being retained for 20 minutes without opening the mouth. No temperature should be taken within one hour of food-taking in the case of mouth temperatures, or within half an hour of defæcation in the case of rectal temperatures.

The difference between rectal and mouth temperatures is a variable one, being less at higher temperatures than at lower, greater in winter than in summer, more in one patient than in another. Only rectal temperatures should be taken on test days to determine the classification of the case. Temperatures taken in the stream of urine are unreliable without safeguards which cannot usually be enforced. Those physicians who dislike rectal thermometry, and find mouth temperatures a sufficient guide to treatment, need only take rectal temperatures on test days.

Pulse-rate.—This should only be recorded after at least half an hour without coughing fit or ablutions or exertion of any kind.

Weights.—In estimating weights, the weight of the clothes should always be deducted. The standard adopted should be either the highest known weight in health or, if this is not known, the average for height, age, and sex. Loss of weight being much less important than increase in fever or pulse-rate, only considerable losses have been taken into account in this classification.

Results of Treatment.

In recording improvement or the reverse, I would suggest that patients staying six weeks or less be classed apart. So short a period of treatment can only as a rule be regarded as educational, not curative. Patients longer under treatment might be grouped according as they have been treated for three months or less; over three and under six months; over six and up to 12 months; or over 12 months.

Constitutional and local results should be stated separately. Dr. C. T. Williams pointed out the advisability of this years ago; and the adoption of the classification suggested in this paper would give a convenient basis for such statements. Whenever the patient has not been long enough under treatment to ensure arrest of the disease, removal from Class B to Class A might be regarded as evidence of *moderate* improvement, from Class C to Class A as *marked* improvement, lesser degrees of improvement being recorded as *slight*. As regards local improvement, disappearance of adventitious sounds, even on cough, from an area the extent of one lobe (provided this be not caused by blocking of bronchial tubes) might indicate *marked* improvement, from half a lobe *moderate* improvement, smaller degrees *slight* improvement. Patients remaining long enough for *apparent arrest* should pass a test modelled on that of the American Medical Association—viz., absence of constitutional symptoms of disease beyond such dyspnœa as is inseparable from loss of lung tissue, permanent absence of râles and crepitations even on cough, free entry of air everywhere, and absence of expectoration ever containing tubercle bacilli. Continuance of these conditions for a twelvemonth to indicate *apparent cure*.

Ultimate results.—There are many fallacies in classifying the ultimate results of treatment of lung disease. Seeing that the disease is caused in many cases by unfavourable conditions or habits of life, it is illogical to apply the same test to one who returns to an unhealthy employment and to another who goes back to favourable conditions. Indeed, when the patient has not reached apparent cure, the results might more logically be classified according to conditions of life than according to treatment, since the former continue much longer and often have more influence on the final result. A full discussion of the methods of recording results of treatment in lung disease would, however, take too long, and must be left for some future communication.

Bibliography.—1. Turban: The Diagnosis of Tuberculosis of the Lung, Trans., E. C. Moriand, 1905. 2. Tuberculosis, Berlin, 1907, Band vi., p. 569. 3. Ibid., Band vi., p. 140. 4. Die Handhabung des Heilverfahrens bei Versicherten im Jahre 1896, Hamburg, 1897. 5. Lawrason Brown: The Classification of Pulmonary Tuberculosis, Journal of the American Medical Association, vol. liii., No. 5, Jan. 30th, 1909.

Farnham.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTE ON A CASE OF RECURRING ATTACKS OF INTUSSUSCEPTION.

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OCCURRING, as it generally does, in well-nourished and thriving infants, intussusception would appear to be an affection of the healthy rather than of the unhealthy or delicate, and it is therefore the more to be wondered at that recurrence after reduction is so rare. That it does not return immediately is easily explained by the œdema of the intussusceptum, which renders reduction difficult and immediate recurrence unlikely, but when the œdema has completely subsided, as it probably does very shortly after reduction, it is rather difficult to explain why the same conditions as brought about the original trouble should not become re-established and cause a recurrence. Almost everyone who has written on the subject mentions this rarity of recurrence, and it is probably an uncommon experience to be called upon to operate more than once on the same patient for this affection. The following case is of some interest in this connexion, especially as it is now nearly seven years since the first operation. The patient has recently been under my care again for an acute glandular abscess in the neck, and it seemed that his previous experience would be worth recording.

The child's history is as follows. Born at full term in January, 1904, he was breast-fed and quite healthy until the age of 10 months, when, just as he was commencing to have other food, he was one day seized with an attack of abdominal pain, vomited frequently, and passed blood and slime from the rectum. After four days of this condition intussusception was diagnosed and he was taken to an hospital, where he was successfully treated by inflation with air. Five months later he had a precisely similar attack after being perfectly well during the interval. An anæsthetic was given and the bowel injected with warm water. This was apparently quite successful, for the child was quite well during the next six months, and then (October, 1905) another attack occurred, and he was admitted under my care at the Hospital for Sick Children, Great Ormond-street.

On admission the child showed the usual signs of acute intussusception—vomiting, the passage of blood and mucus from the rectum, and the presence of an elongated swelling in the right iliac region. The abdomen was opened through the right rectus muscle and an intussusception was found occupying the last 8 inches of the ileum, but not passing through the ileo-cæcal valve. This was easily reduced, although the entering bowel was a good deal thickened by

congestion. No adhesions were found, but the lymphatic glands in the mesentery corresponding to the intussuscepted portion of the bowel were much enlarged. Recovery was uneventful, and the child was sent home.

Four months later (March, 1906), whilst at home, the child had what appeared, from the history given later by the mother, to be a typical attack of intussusception, during which blood and mucus were passed by the rectum. From this he recovered spontaneously, and when seen at the hospital a few days later nothing abnormal could be detected. One month later (April, 1906) what would seem to be the fifth attack occurred, when in the early morning he was seized with abdominal pain, was sick four or five times during the day, bringing up a little blood on one occasion, and in the afternoon passed blood and mucus by the rectum. In the evening of the same day he was again admitted to the hospital under my care. On admission he is stated to have been a fat and healthy looking child, but somewhat drowsy; temperature 96·4° F.; abdomen flaccid, not tender; a definite tumour could be felt in the right iliac region passing into the right loin. Shortly after admission the abdomen was again opened, on this occasion by splitting the muscles in the right iliac region. An ileo-colic intussusception was then found about 5 inches in length, the lower end of the ileum being prolapsed through the ileo-cæcal valve. Reduction was more difficult than on the previous occasion, as the intussusception was very œdematous and the mesenteric glands much enlarged, some to 1½ inches in length. After reduction had been effected three silk sutures were inserted into the mesentery of the lower part of the ileum, plicating and shortening it. Recovery was again uninterrupted and the child was sent home three weeks later.

Six years have now elapsed and the child has during that time had no return of abdominal trouble. He has grown into a fairly healthy-looking boy, still showing the marks of the two operations, but without any hernial protrusion at their sites. His experience of intussusception and its treatment is probably unique, for he was treated by inflation with air, injection with water, abdominal section twice, and on one occasion recovery seems to have been spontaneous. What share the plicating of the mesentery at the second operation took in preventing recurrence must, of course, be doubtful, for the tendency to intussusception diminishes as age advances, and so it may be that no further attacks would have occurred had this not been done. Still, its performance coincided with the termination of a rather unusual series of attacks of this affection.

Queen Anne-street, W.

A NOTE ON INTRACTABLE OTORRHŒA DUE TO LATENT EMPYEMA OF THE ANTRUM OF HIGHMORE.

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Mr. Herbert Tilley, in his book on "Diseases of the Nose and Throat," says: "I have seen two cases of intractable otorrhœa immediately clear up when the corresponding maxillary antrum was drained of its septic contents." I have recently seen two such cases, and I think it well to draw attention to the course of the otorrhœa, which is peculiar and, I think, diagnostic.

CASE 1.—A man, aged 23, had acute right-sided suppuative otitis media following a cold in the head. This at first ran the usual course. The discharge became scanty and purulent, but just when one expected it to cease and the perforation to heal, there was a relapse to the profuse serous discharge. The ear sometimes remained dry for a few days, but never more than a fortnight. This continued for six months in spite of treatment. The patient also complained of an intermittent sense of discomfort in the other ear. The perforation was in the anterior segment of the membrana tympani and central. The hearing varied but was fairly good. Pus was then discovered in the right antrum of Highmore which was drained by removing the antro-nasal wall. The cavity was irrigated daily with boric lotion. In four weeks the discharge from the ear ceased, and now, four months later, it has not recurred. The perforation in the membrana tympani is now much smaller and the hearing has improved. The empyema of the antrum probably dated from acute rhinitis three years before, but had caused so little inconvenience that its presence was not suspected. There was slight hypertrophic rhinitis and the patient had had to hawk up a few pellets of tough muco-pus from the naso-pharynx every morning.

CASE 2.—A man, aged 32, had discharge from the right ear on and off for six years. The otorrhœa had never ceased for more than three weeks at a time. He also complained of intermittent discomfort in the other ear and of hawking up phlegm from the throat. On examination there were hypertrophic rhinitis and a fringe of polypi on the right middle turbinal. There was some muco-pus in the naso-pharynx and some granular pharyngitis. The ear and nose were treated for a considerable time without improvement. Pus was then found in the right maxillary antrum, and a radical operation was performed through the canine fossa and the nose. The otorrhœa ceased immediately, and now, nine weeks later, has not recurred.

To sum up, I think an otitis media showing the following characteristics should lead to a careful examination of the corresponding antrum of Highmore: (1) Intermittent otorrhœa; (2) central perforation of the membrana tympani; (3) hearing varying from time to time, but is better than one would expect after prolonged suppuration; and (4) intermittent discomfort in the other ear.

One must remember that an empyema of the antrum of Highmore may be present for years and cause practically no inconvenience. As Mr. Lack says in his book on "Diseases of the Nose," "Cases of antral suppuration are frequently met with in which the patient complains only of hawking up phlegm from the throat, and will not admit that he has any nasal discharge, even on cross-examination."

Great Portland-street, W.

Reviews and Notices of Books.

Principles of Human Physiology. By ERNEST H. STARLING, M.D. Lond., F.R.C.P. Lond., F.R.S., Jodrell Professor of Physiology in University College, London. With 564 figures in the text. London: J. and A. Churchill. 1912. Pp. 1423. Price 21*s.* net.

THE present time seems to the author fitting for the production of a text-book of physiology which, while not neglecting the data of physiology, should lay stress upon the mutual stimulation and coöperation among the different sciences, especially in the regions of physics and chemistry, and should attempt to weave these data into a fabric representing the principles that are guiding physiologists and physicians of the present day in their efforts to extend the bounds of the known and to increase their powers of control over the functions of living organisms. The mere preliminary reading of some primer on physiology is not in our opinion sufficient to enable the student to follow much that Professor Starling sets forth with such lucidity. Readers of this volume should come to its study with a mind well stored with the leading facts in physics and chemistry. Purposely the author has omitted a full account of the multifarious methods employed in the experimental investigation of the different organs of the human body. He shows that the only foundation for rational therapeutics is the proper understanding of the working of the human body. Until we know more about the physiology of nutrition "quacks will thrive and food faddists abound." "Ignorance of physiology tends to make a medical man as credulous as his patients, and almost as easily beguiled by the specious puffings of the advertising druggist."

The work is divided into four books of unequal length: I., General Physiology; II., Mechanisms of Movement and Sensation; III., Mechanisms of Nutrition; and IV., Reproduction. In Book I. the general concepts of the science are set forth, and the student is advised to omit it on a first perusal of the text-book. In it the structural, material, and

energetic bases of the body are considered, and it covers about 200 pages. In dealing with the general structure of the cell we find the term "hardening reagents" used when perhaps "fixing reagents" would be better. In this book special attention is given to the characters and properties of the surface layer of cells, of permeable and semi-permeable membranes, and the colloidal condition of matter. The account of the elementary chemical constitution of living cells, the proximate constituents of the living body, and the description of the constitution and properties of fats, carbohydrates, and proteins are much on the usual lines. Very interesting is the chapter on the mechanism of organic synthesis as represented by the assimilation of carbon, the formation of starch—which may be regarded as the first act in the life-cycle—and the production of proteins in plants. A few of the dates of important discoveries in plant physiology are given. The student should direct his attention especially to the chapter on the energetic basis of the body, dealing as it does with energy of molecules in solution, osmotic pressure, passage of water and other substances across membranes, the properties of colloids, sols, and hydrosols, the optical and electrica behaviour of hydrosols and colloids, adsorption, imbibition, and other physical factors which play such an important part in our bodily functions. The mechanism of chemical changes in living matter leads to a consideration of ferments. In spite of the enormous diversity of chemical actions in the body, they may be referred to four chief types—hydrolysis, deamination or deaminisation, decarboxylation, and oxidation and reduction. Nor is the synthetic action of ferments omitted. Book I. closes with a short chapter on the electrical changes in living tissues.

In Book II. the reader is introduced to "reactivity characteristic of all living things to reflex action," and what is meant by this term is fully described later. The description of a muscle on p. 199 is not very happy, while on p. 198, as regards smooth muscle, it seems unnecessary to employ both terms—intestine and alimentary canal. Moreover, Rollet is obviously a misprint for Rollett. The physiology of muscle is dealt with somewhat elaborately, and the newer work of Keith Lucas and others is introduced. The mechanical, chemical, thermal, and electrical changes are considered. The diagram of the rheoscopic limb is unsatisfactory, while it seems strange to see the well-known name of Du Bois-Reymond printed both in the text and also in the index as Du Bois Raymond. Einthoven's string galvanometer and the results obtained are fully described. Theories of muscular contractions are mentioned, but the author, without deciding in favour of one or the other, remarks that they "may serve to point the direction which future researches into the intimate nature of muscular contraction must take." The little that is known of smooth muscle is set forth, and a very short account is given of amœboid and ciliary movement. Nerve fibres as conducting structures are next considered, but nothing is said of the cylindrical shape of the funiculi of a nerve and the adaptation of a nerve to changes of form during the movement, e.g., of a limb. The nerve impulse, its nature, conditions affecting it, and excitation of nerve fibres are described. The neuro-muscular function and the physiology of the "receptor" substance of Langley are specially considered. The action of drugs, such as adrenalin and nicotine, on the receptor substance, which Langley postulates as intervening between the terminals of a nerve in a nerve-muscle preparation, is next weighed. The author then deals with what is called irreciprocal conditions as manifested in the synaptic arrangements of the central nervous system. There is a good account of the evolution and significance of the nervous system. Reflex action is treated much on the lines of Sherrington's work as regards localisation, delay, summation, fatigue, block or resistance, facilitation or "Bahnung," and inhibition. The description of the central nervous system is ample, clear, and up to date. To us the treatment of the cranial nerves seems rather scanty—e.g., the effects of stimulation of the third nerve are given, but nothing is said of its section or paralysis and the resulting ptosis. Under the seventh nothing is said of Bell's paralysis. We are glad to see that the views of Marie regarding aphasia find a place, for Marie has shown that Broca's aphasia does not exist as a result of lesions of Broca's convolution. The physiology of sensation is next dealt with; the relation of stimulus to sensation, the cutaneous, auditory, and other sensations being fully considered. To vision 80 pages are allotted. We welcome the chapter on comparative physiology of accommodation, and are glad to see that the work of Edridge-Green finds a place. Book II. closes with a section on organic sensations.

Book III. occupies nearly one-half of the whole work. Metabolism is fully discussed. Chittenden's diet is considered unsatisfactory as regards its heat value, so that individuals on this *régime* feel the cold. The physiology of digestion is admirably set forth, but even now it appears that the origin of the islands of Langerhans "cannot be regarded as finally settled." The chief value of the large intestine in carnivora and in civilised man seems to be as an excretory organ—e.g., for lime, magnesia, iron, and phosphates. The movements of the intestines, absorption, the fate of amino-bodies, and feeding with abiuret bodies are all fully discussed. The summary of the absorption of fats (p. 837) is particularly good. As regards proteins, the author commits himself to the view that the albumoses and peptones are rapidly changed in the mucous membrane itself into amino-acids. All the phenomena connected with blood are lucidly expounded. To the circulation nearly 200 pages are devoted, and to respiration 70 pages, both chapters being models of graphic exposition. The urine, skin and skin glands, temperature of the body, and the ductless glands bring Book III. to an end. Book IV., on reproduction, contains over 40 clearly written pages.

The author has attained admirably his object as set forth in the preface. The work stands out as the output of one who himself has added a knowledge of many new truths to physiology, as well as one who possesses in quite an extraordinary degree the gift of setting forth his subject in a plain, convincing, and logical narrative. We venture to predict for this volume a warm welcome, and we offer the author our thanks for the concise and masterly survey he gives of that science which has as its ultimate object the improvement of the welfare of animated creation in general and man in particular.

Clinical Diagnosis: a Manual of Laboratory Methods. By JAMES CAMPBELL TODD, Ph.B., M.D., Professor of Pathology, University of Colorado. Second edition. Illustrated. London: W. B. Saunders Company. 1912. Pp. 469. Price 10*s.* 6*d.* net.

Professor Todd's work arose from notes employed in a course of practical instruction in clinical pathology intended for students and practitioners. The simplest methods and those requiring the least time are therefore chosen. The book, though essentially practical, nevertheless considers the clinical importance and the interpretation of the results obtained. This, the second, edition has been revised and the scope somewhat enlarged. The introduction to the book consists of a description of the microscope, and explains how this instrument may be used intelligently.

The first chapter deals with the microscopical and chemical

examination of sputum; the organisms commonly met with in sputum are mentioned, and methods for staining them described. Reference is made to the albumin test of sputum in cases of supposed pulmonary tuberculosis. Under the chemical examination of urines the author describes and approves of Purdy's centrifugal methods for estimation of albumin, phosphates, &c. A useful table setting forth the differences of urines in the various forms of nephritis is included.

The author deals at some length with the blood, and carefully and fully describes the technique of counting the red and white cells and of making and staining blood films. The various forms of leucocytes are described and a valuable table is given which enumerates the various points necessary for a differential diagnosis of blood diseases. The author gives some account of blood parasites, and has included a useful diagram contrasting an anopheles with a culex mosquito. There is a section on serum reactions, and the technique necessary for performing Widal reactions, opsonin estimations, and Wassermann reactions is briefly described; but the student and practitioner for whom the work is designed would require further details or the assistance of a demonstrator to carry out these methods with success. Under the heading "Special Blood Pathology" the various anæmias and leukæmias are referred to and their salient points described. Examination of the gastric contents is dealt with, and in a further chapter the macroscopic and microscopic examination of the fæces. The chief animal parasites are briefly referred to. The last chapters deal with miscellaneous examinations, such as the examination of pleural and cerebro-spinal fluids, with special bacteriological methods, amongst which is mentioned a useful medium in which to grow the typhoid bacillus, and with the making and using of vaccines. There are a number of illustrations which satisfactorily represent the objects portrayed.

The book is of good appearance and the paper and type are satisfactory. We think it should prove useful to the clinical pathologist for general reference.

Practical Exercises in Physiological Optics. By GEORGE J. BURCH, M.A., D.Sc. Oxon., F.R.S. Oxford: The Clarendon Press. 1912. Pp. 164. Price 4*s.* net.

THIS book was written for the practical classes in physiological optics required by the regulations for the diploma in ophthalmology of the University of Oxford. In our experience physiological optics is a subject that forms so small and subsidiary a part of the ordinary course of physiology that it is neglected by most medical students. But attention has been directed to it by specialists in psychology, who of recent years have devoted much thought to the experimental side of their subject. A vast amount of knowledge of the physiological and psychological processes of vision has thus accumulated, but for the most part it is unheeded, even by ophthalmologists. Yet it must be admitted by all that it is the scientific foundation of their art, and therefore is worthy of a more honoured place in their curriculum. It was only to be expected that in founding a diploma in ophthalmology the University of Oxford should be faithful to its traditions, and include in the regulations those fundamental studies which, if not of immediate and self-evident practical application, yet furnish the key to further research and possibilities of practical utility which so often lie hidden in the arcana of pure science. It is as yet too much to hope that every embryo ophthalmologist shall include a course of practical physiological optics in his curriculum, but effort should be made by those responsible for his education that the means to pursue such a course should be placed at his disposal, and the University of Oxford is to be congratulated in bringing the subject more closely into touch with ophthalmology. For such a course this book will prove invaluable, and no better guide than Dr. Burch could have been selected. His equipment, both as physicist and physiologist, is ideal, and his well-known researches into colour vision especially indicate his suitability for the task.

The book is divided into six sections—dioptrics, dioptrics of the eye, judgments of the eye, sensations of the eye, measurement of colour sensations, and experiments by flashing light. The first section is a masterly exposition of the properties of lenses, and contains just those practical details which show thorough familiarity with the handling of optical instruments. The second section contains a novelty, in the author's apparatus for determining the acuity of central vision. The method is, we believe, quite new. We await with considerable interest Dr. Burch's full explanation and mathematical exposition, which we understand will be shortly published. The section on the measurement of colour sensations is the longest, and should be studied by all who are interested in colour vision and colour blindness. It deals almost entirely with pure spectral colours, and gives most useful directions for the calibration of the spectroscope. Dr. Burch, of course, speaks with authority on the subject of colour fatigue. The last section deals with flicker phenomena, Talbot's law, Shelford Bidwell's experiments, Benham's top, and so on.

We cordially recommend the book, not only to those who have the opportunity to carry out the experiments, but also to all who are interested in the subject.

One Hundred Surgical Problems, the Experience of Daily Practice Dissected and Explained. By JAMES G. MUMFORD, M.D., Visiting Surgeon to the Massachusetts General Hospital; Instructor in Surgery in Harvard Medical School. Boston: W. M. Leonard. 1911. Pp. 354. Price $3.

THIS is one volume of a series called "The Case History Series," and some of the other volumes have already appeared. It contains reports of 100 surgical cases, each of which presents a problem or illustrates some important points in diagnosis or treatment. The method of teaching by concrete examples is highly valuable; it is better that clinical cases should be seen, but when this is not possible the next best thing for the student is to have clear reports of cases. On the whole the cases selected have been chosen with judgment; each is described, the history being first given, then the physical signs and symptoms are detailed, the different points are discussed, the treatment employed is mentioned, and the final result is recorded, while footnotes help to clear up outlying points. Some skiagrams show well various forms of ptosis of the colon. Most of the cases are examples of abdominal surgery, but a few gynæcological cases are included.

We can commend the book to those who wish to study the problems presented by some interesting surgical operation cases.

Die Gynäkologische Prophylaxe bei Wahnsinn. By Professor L. M. BOSSI, Vorsteher der Universitäts-Frauenklinik zu Genua. Berlin: Oscar Coblentz. 1912. Pp. 137. Price 3 marks.

IN this little work Professor Bossi draws attention to the important part which, in his opinion, various gynæcological affections play in the production of insanity, and pleads for their treatment in all such cases. From his experience, which is set out in the histories of a number of cases which he quotes, he is led to the following conclusions. Before any patient is confined in an asylum care should be taken to make certain that the genital tract is not in any way diseased, for if this is found to be the case the

treatment of the condition should be undertaken and its cure brought about before the patient is certified for confinement. In all gynæcological clinics accommodation should be provided for the class of patient in whom some disease of the genital tract co-exists with the mental condition, so that the treatment of the two may be carried out simultaneously. The very important bearing which anatomical and functional alterations of the genital organs have upon the development of nervous, psychical, and mental disturbances of equilibrium, especially in women with a hereditary tendency thereto, should be impressed by gynæcologists upon students and practitioners. Lastly, the fact must be recognised, that while by the long-continued neglect of diseases of the ovaries and uterus various mental conditions can undoubtedly be set up, yet at the same time, by the treatment of such affections, they can be relieved, and therefore the prophylactic treatment of insanity must, among other things, include an early and a thorough treatment of all such affections of the pelvic organs.

Atlas Typischer Roentgenbilder von Normalen Menschen. By Dr. RUDOLF GRASHEY, of Munich. Second edition. Munich: J. F. Lehmann. Pp. 214. Price 20 marks.

THE basis of scientific Roentgen diagnosis must be a competent knowledge of the normal skiagram, and for this purpose an Atlas of Typical Roentgen Pictures of Normal Subjects is as necessary to the radiologist as an atlas of anatomy is to the surgeon. The book under consideration forms the fifth volume of Lehmann's series of medical atlases. A comparison with the first edition, which appeared in 1905, shows the enormous development in Roentgen technique that has taken place during the last few years. The atlas embodies a complete system of radiography in which every detail is clearly described with abundant illustrations and diagrams. This has been done so thoroughly that it is possible for one unacquainted with the German language to derive much useful information from a careful study of the illustrations, since in almost all cases the anatomical regions are described by their Latin names.

In the section on the radiography of special regions of the body we notice many new ideas which have much to commend them, but which have not as yet come into general use. Dr. Grashey always gives the method that is capable of showing any particular region to the best possible advantage. The technique for bringing out various structures of the head and face is especially worthy of attention. The value of this series of normal radiograms is greatly enhanced by the fact that alongside each illustration is a diagram showing exactly how the patient was placed in order to obtain that particular view. There is also a tracing to assist in the interpretation of the radiogram, and in many cases a picture of the bone itself, placed in the same position as in the radiogram. So far as their particular purpose is concerned many of these illustrations are practically perfect. We would direct special attention to the admirable series illustrating the carpal region on pages 132 to 142, and also to those illustrating the knee-joint, pages 170 to 180. The series devoted to the ankle and foot should be of the greatest interest to the orthopædic surgeon as well as to the practical radiographer.

Radiological nomenclature is still in a very unsettled state. In England, at all events, the directions as to the relative positions of the focus tube, the patient, and the photographic plate are somewhat vague, and each author seems to have a nomenclature of his own. The German writers are not open to the same reproach, although to avoid all ambiguity they are driven to employ some barbarous and sesquipedalian definitions. For instance, in designating the double oblique skiagram of the jaw in Fig. 22 the illumination is said to be "cranio-dorso-dextro-sinistral," and many of the definitions are even more complicated than this. The plate so described is, however, a masterpiece of the radiographer's art. The atlas is not confined to skiagrams of the normal adult form, and we can conceive of no more instructive way of studying the gradual development of bone and epiphysis than by the careful examination of a series of skiagrams such as Figs. 207, 158, 160, 161, 183, and 176, which show the ankle joint in a new-born infant, a child of 10 months, and others of 3 years, 5½ years, 15½ years, and in a man of 45, respectively. For teaching purposes such pictures of the actual bones *in situ* should prove invaluable. Indeed, we may go so far as to say that this admirable atlas should be in the hands of every surgeon and most physicians, as much for the great assistance that it will give them in recognising any departure from the normal as for its use in simplifying the interpretation of an ordinary skiagram. As for the radiographer, no matter how skilled he may be, he is sure to find in it numerous hints and suggestions for improvement in technique and diagnosis.

Urologische Operationslehre. Von Dr. RUDOPF OPPENHEIMER in Frankfurt am Main. Mit 113 Abbildungen im Text und 12 zum teil farbigen Tafeln. Wiesbaden: J. F. Bergmann. Glasgow: F. Bauermeister. Pp. 350. Price 24 marks.

Dr. Oppenheimer has succeeded in writing a very readable work on the operations on the urinary organs, and he has treated the subject thoroughly. A chapter on the investigation of the urinary organs begins the work, and then follow chapters on the preparation of the patient, the anæsthesia, the instruments, and the after-treatment of the patient. All the operations on the kidney, the bladder, and the other parts of the urinary tract are briefly but adequately described in turn. The most striking characteristic of the book, however, is the illustrations, all of which are very good, but special reference must be made to those which are reproductions of water-colour sketches; these give a very excellent and lifelike representation of the appearances presented by the area of operation. Altogether the book provides an interesting introduction to the operations on the urinary system.

LIBRARY TABLE.

Sun Yat Sen and the Awakening of China. By JAMES CANTLIE, M.B. Aberd., F.R.C.S. Eng., and C. SHERIDAN JONES. London: Jarrold and Sons. Pp. 294. Price 6*s.* net.—Revolutions in history have been many and various, but there has possibly never been one that will eventually be so far-reaching in its effects or carried out with so little loss of life as that which has converted China from a practical autocracy into a republic. And this change has been largely the work of one man who for some 20 years worked, organised, travelled, and reasoned with his countrymen throughout the Chinese Empire and with those who dwell in foreign lands. The factors that made revolution possible were all in existence but unready for either coalition or activity. It now seems that the revolution was a triumph of preparation and organisation; and that the man to whom success is due is Sun Yat Sen. Sun Yat Sen began his schemes in 1894 by joining a society in Canton whose aim was to get rid of the Manchu dynasty—a very usual object with a large number of conspirators for many decades. The Government of the day had, as always, "a short way with dissenters," and soon after the inception of the society 17 of its members were beheaded, Sun Yat Sen being the only member left. On Feb. 12th, 1912, the last Manchu emperor abdicated, the intervening history being fairly well known to all of us, and the first stage of Sun Yat

Sen's life work was accomplished. Mr. Cantlie gives a short history of Sen's life. He was educated as a medical man at the Hong-Kong College of Medicine, of which institution Mr. Cantlie was one of the founders. An idea only can be formed of Sen's labours and dangers (for 20 years it may be said that he carried his life in his hand) from these pages, but presumably the time is not yet ripe for a full account. When such an account can be written it will be of absorbing interest. The remainder of the book is mainly a description of China and of Chinese customs, with a short account of that singularly able but unscrupulous lady, the Dowager Empress. Of the "Old Buddha" the wonderful book by Mr. Bland and Mr. Backhouse has already given us a vivid picture, and, like those authors, Mr. Cantlie refers to the evil influence exercised by the palace eunuchs, a class which has always been prominent in a decadent empire. As in China in the twentieth century, so it was in Rome in the fourth century, and the words of Ammianus, Book XVIII., Cap. 4, who refers to the chief eunuch of Constantius as "coluber copia virus exuberans," might equally be applied to the eunuchs at the Chinese Court. Mr. Cantlie concludes with a chapter on the future of China. It is certainly a land with a noble prospect. The vast mineral and agricultural wealth has hardly even been tapped to-day, while the power which exists *in posse* in a population of some 400,000,000 is a world-political factor of incalculable importance. The awakening of China has but begun, and the movement carried through largely by Sun Yat Sen must mature for many years before its full effects are to be seen, but it looks as though in future years the English-taught medical man will be bracketed with the Great Khan and the early Emperors of the Ming dynasty among the chief glories of the land.

Words to Wives on Pregnancy and Parturition. By S. BINGHAM, M.R.C.S. Eng. London: George Allen and Co. 1912. Pp. 201. Price 3*s.* 6*d.* net.—This little book is addressed principally to young married women, and is written in view of the fact that many of them, in the words of the author, come to confinement ill prepared for the struggle, while not infrequently they suffer afterwards from illnesses which might have been avoided. The purport of the book therefore is to provide such information as will enable these women to pass through the period of pregnancy with little disturbance to health and to look on the approach of motherhood with cheerful confidence. The author in following out this conception has considered the course of a pregnancy month by month, and describes the various disorders that may arise at the different periods. An account is also given of what occurs during a normal labour and of the management of the puerperium. Inasmuch as the danger of puerperal fever is one which besets every woman who bears a child, a brief account is given of the nature of this malady and of the means that have been devised to prevent its occurrence, with a description of how antiseptic measures can best be carried out in ordinary private practice. Mr. Bingham also gives a short account in simple language of the part played by microbes in the production of this disease. The book contains a large amount of useful information in simple language, and the author has succeeded well in his endeavour not to give more than can be readily understood by those for whom the book is intended. It should therefore prove helpful to women.

JOURNALS AND MAGAZINES.

Jahreskurse für Aerztliche Fortbildung. Munich: Lehmann. In monthly parts. Price 18 marks per annum.—The May number is devoted to a consideration of recent advances in our knowledge of nervous and mental diseases. Dr. Marburg contributes an interesting article on the relationship between the internal secretions of the ductless glands and the nervous system. After pointing out that the specific chemical affinities of various parts of the brain and cord are evidenced by their interactions with drugs such as strychnine and cocaine, acting on the posterior horn cells and on the cortex respectively, whereas hypnotics and anæsthetics act by combining with lipoids (H. Meyer), he shows that the internal secretions also induce chemical interactions with particular parts of the nervous apparatus. Thus he believes that the internal secretion of the thyroid controls the growth of grey matter, and that of the pineal gland the growth of neuroglia. He finds other instances of the relationship in the mental attitude so characteristic of hyperthyroidism in Basedow's disease, and the dulness and torpidity of myxœdema and cretinism. Again, tetany is now known to be due to failure of the secretion of the parathyroid glands. The sex-glands undoubtedly exercise some subtle influence on the brain, which reacts both to puberty and to the climacteric in a characteristic manner. Something corresponding to the mental effects of the menopause is occasionally seen in the male. Some forms of epilepsy appear to be due to hyperthyroidism, and others are associated with tetany due to deficient parathyroid secretion. Paralysis agitans is said to be due to a defect in the parathyroid glands, as possibly also is chorea. The action of adrenalin on the terminals of the sympathetic system is, of course, well known; this secretion and that of the thyroid reinforce the general action of the sympathetic nerves, whereas pituitary and genital-gland extracts have the reverse or "vagotonic" effect. A brief *résumé* follows of recent observations on poliomyelitis, tabes in women (83 per cent. of such cases give a positive Wassermann), the nerve palsies seen after salvarsan, and various neuroses. The articles on psychiatry are contributed by Professor Binswanger, of Jena, who deals with congenital feeble-mindedness of children, and by Professor Berger, who writes on the affective psychoses and dementia præcox. The former discusses at some length the psychology of idiocy and of feeble-mindedness in relation to percept and concept, and the methods of classifying these cases according to their intellectual capacity. The latter describes how mental cases should be investigated—the personal history, history of the disease, the bodily and mental symptoms and signs that require elucidation, and the significance of hallucinations and delusions. He then discusses the characters, prognosis, and treatment of mania, melancholia, and "circular insanity," of which acute mania is nearly always a phase. Dementia præcox, so named by Kraepelin, comes on usually before the age of 25; in 70 per cent. of the cases there is a hereditary taint, and it is not uncommon for several brothers and sisters to be affected one after another at the age of 20. The thyroid may be enlarged and menstruation may cease, but the nervous findings are normal. With regard to the prognosis, about 10 per cent. are quite cured, another 20 to 30 per cent. show slight permanent impairment, but 60 to 70 per cent. become severely demented. About 25 per cent. are able to resume their occupation in time. Kraepelin describes three subvarieties, dementia hebephrenia, dementia katatonica, and dementia paranoides. The first comes on gradually; there is often headache and a state of terror that may lead to suicide. In katatonia the muscles are affected; often the action is the opposite to the instructions given, or there may be a condition of wax-like flexibility. The patient is often mute. In paranoia there are numerous delusions.

Professor Langstein monopolises the pages of the June number, taking as his subject the problems of infant-feeding. He deals first with hunger and underfeeding in

healthy and unhealthy infants, whether breast- or bottle-fed, and explains that he is using the term "hunger" to express a total failure to obtain or assimilate food. In animals death does not usually occur until 40 per cent. of the body weight is lost, but in infants a loss of 30 per cent. is seldom survived. It is well known that the mother's milk may prove to be deficient in iron, and also that during the first few days of life the child's weight falls in consequence of underfeeding. The principal evidences of inadequate nourishment are loss of weight and hollowing of the abdomen; the pulse, heart beat, and temperature may show no change at first, though "inanition fever" is not uncommon during the first week of life. Vomiting and diarrhœa also may be signs of underfeeding. If fever occurs the loss of weight is accentuated. Various skin eruptions are common. It is important to remember that the bowels may be opened too frequently from underfeeding as well as from overfeeding. The most reliable method of determining whether a breast-fed infant is getting a proper quantity of milk is to weigh it before and after the meal, and if necessary the mother's milk must be supplemented by artificial feeding. Bottle-fed infants are more likely to suffer from a qualitative than a total underfeeding, the proteins, in particular, tending to fall below the desired amount. Underfeeding with fat would seem to enhance the susceptibility to tuberculosis. A proper amount of carbohydrate, too, is indispensable, and cannot be replaced by fat. In sick or ill-nourished children the effects of insufficient feeding are seen earlier. Even a 12 hours' fast induces collapse, low temperature, and quickened pulse-rate, and death is not improbable. If the body-weight falls one-third recovery is almost impossible. For feeding marasmic children human milk is recommended as the best remedy, also lactalbumin is favourably mentioned. Fluids may be supplied in the form of weak tea, water, or rectal saline. If there is pyloric spasm an attempt may be made to pass a soft catheter through into the duodenum. Therapeutic starvation in children must never be absolute for more than a few hours, and though it is often wise to reduce the carbohydrates and fats it is unjustifiable to restrict the proteins. Absolute starvation for 12 hours, followed by limitation of farinaceous foods, often has a remarkable controlling effect upon the spasm-diseases of infants. The author concludes by discussing the dietary of older children in health and in sickness. Tables are given showing the heat value in calories of the food required at various ages and the yield of the principal food-stuffs. A model vegetarian daily *régime* for children is included. He adopts the comfortable maxim that in the proper upbringing of children the food-supply should be regulated principally by the appetite. During attacks of intestinal catarrh in the second and third years of life it is recommended to increase the proteins and reduce the carbohydrates in the dietary. Meyer stops all milk for eight days, even after the motions have become normal. His dietetic *régime* consists of albumin preparations, such as plasmon and nutrose, alternating with cheese and broth, and then fruit towards the end of the period.

Parasitology. Edited by G. H. F. NUTTALL, F.R.S., and A. E. SHIPLEY, F.R.S.; assisted by EDWARD HINDLE, Ph.D. Vol. V., No. 2. June 29th, 1912. London: C. F. Clay, Cambridge University Press. Price 10*s*. net. Yearly subscription, £1 10*s*.—The present number opens with an article by C. Strickland on "Agrippina bona, nov. gen. et nov. sp., representing a New Family of Gregarines." This species is parasitic in the alimentary tract of the larva of the common rat flea, Ceratophyllus fasciatus, Bosc., and the majority of specimens examined were found to be infected. The parasite is of interest to the cytologist on account of the extraordinary nuclear changes that take place during the division of the sporonts. This species is made the type of a new family of gregarines, Agrippinidæ, with the following characters: cephaline eugregarines forming symmetrical unarmed spores, oval in shape; no syzygy formation, and the presence of a symmetrical digitate epimerite. The "Note on 'Crithidia' cleti, n.sp., Parasitic in the Alimentary Canal of Cletus varius, Dall.," by Edward Hindle and R. C. Lewis, contains a short account of the anatomy of a flagellate found in the alimentary canal of a hemipterous insect captured in the neighbourhood of Pretoria. This species can certainly not be regarded as a stage in the life-cycle of any trypanosome, as its host feeds entirely on the juices of plants. "The Anatomy of Stilesia globipunctata (Rivolta)," by Lewis Henry Gough, is an addition to the writer's "Revision of the Genus Stilesia" published last year, and includes a fuller description of the anatomy of this species, which occurs parasitic in the sheep of Egypt. C. W. Stiles, secretary of the International Commission on Zoological Nomenclature, communicates a "Third List of Generic names for the Official List of Zoological Names." Andrew Balfour, of Khartoum, in "The Life-cycle of Spirochæta Gallinarum—an Appreciation and a Criticism of Dr. E. Hindle's Recent Paper," discusses the latter's work on the fowl spirochæte.[1] Dr. Balfour especially criticises Hindle's view that the "intra-corpuscular bodies" occurring in the blood of infected fowls in Egypt may be the result of nuclear degeneration of the red blood corpuscles. In his reply, Hindle, after the study of some of Balfour's slides, admits that he was mistaken in supposing these intra-corpuscular bodies to be a stage in nuclear degeneration, but adds that the possibility of mixed infections occurring in the fowls has not yet been excluded. "What is the Genus Leptomonas Kent?" by E. Hindle, is an attempt to collect the data on which the original diagnoses of the various parasitic insect flagellates have been made. The type species of the genus Leptomonas, L. bütschlii, has never been re-examined since 1876, and until this is done one cannot be certain what really are the characters of this flagellate, for the original descriptions are useless. H. Bayon gives an account of "The Experimental Transmission of the Spirochæte of European Relapsing Fever to Rats and Mice," the work having been performed in Moscow during the winter of 1910. He was able to produce infections in these animals by the direct inoculation of the blood of a patient infected with Spirochæta recurrentis, but the parasites were only present for one or two days. On several occasions it was possible to reinfect animals by the injection of small quantities of infected blood, so that in these cases there was very little immunity as the result of previous infections. The author was unable to find any means of distinguishing S. recurrentis from S. duttoni except by that vague factor, virulence, which is much greater in the case of the latter. It is interesting to find that Bayon brings forward evidence showing that Pediculus vestimentorum is probably responsible for the transmission of European relapsing fever in Moscow, especially as Nicolle, Blaizot, and Conseil have recently shown that this parasite can transmit the infection from man to man in North Africa. S. N. Mitter contributes a "Note on Gnathostomum Spinigerum," describing the presence of tumours in the stomach of a dog and leopard respectively, caused by this parasite. All biologists will agree with Professor Nuttall's tribute to the memory of Adelchi Negri, which concludes the number. This short account of Negri's life and work is accompanied by an excellent portrait and also by a complete list of his publications.

[1] Vide Parasitology, vol. iv., p. 463; THE LANCET, Feb. 10th, 1912, p. 381.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

MUTHOL.

(RUDOLPH DEMUTH, 68, SALUSBURY-ROAD, LONDON, N.W.)

THE snow-white appearance of this preparation made us at first sceptical as to the statement that it contains 99 per cent. of pure medicinal petroleum B.P. Muthol, though a pure white creamy substance, is firm to the touch and almost jelly-like. It has a slightly sweet taste and is oily in the mouth. Its preparation shows considerable skill and doubtless the process needs careful supervision. On analysis we found present 90·57 per cent. of dry, pure, tasteless, non-acid hydrocarbon, 1·56 per cent. of an emulsifying agent, and 7·78 per cent. of moisture associated with this agent. Excluding moisture, therefore, the amount of hydrocarbon oil approximates to 99 per cent. The preparation is obviously well adapted for the administration of a bland pure petroleum. As is well known, petroleum passes through the system unchanged, while it has been shown to act as a protective of the intestinal mucous lining and as a lubricant assisting the passage of the intestinal contents. Our own columns have borne testimony to the advantage of using petroleum in colitis. It is also useful in relieving irritable conditions of the throat.

OZONAIR PORTABLE APPARATUS.

(MESSRS. OZONAIR, LIMITED, 96, VICTORIA-STREET, WESTMINSTER, LONDON, S.W.)

We have recently seen the latest apparatus manufactured by the above firm for the production of ozonised air for domestic purposes. An important advantage of the method is that the formation of ozone is unaccompanied by the production of oxides of nitrogen which occurs if steps are not taken to avoid the situation. The apparatus is practically silent. The ozonair portable generators are made in sizes suitable for purifying the air in rooms of from 3000 to 12,000 cubic feet capacity. They may be connected with the main supply or with portable secondary batteries. It is interesting to note that ozone apparatus is now being made on a large scale for industrial purposes.

CITODA.

(MESSRS. JEWSBURY AND BROWN, ARDWICK GREEN, MANCHESTER.)

This aerated water contains 5 grains of pure sodium citrate to the half pint, together with an equal quantity of sodium bicarbonate. The addition of the citrate was suggested on account of its interesting action upon the casein of milk, which in the presence of citrate appears when acidified as a fine flocculent curd instead of in lumps in the ordinary way. Citoda is, therefore, an advantage when a milk diet is indicated. It forms an excellent beverage mixed with milk, and is decidedly superior to the ordinary soda and milk. Citrate of soda, besides, is practically equivalent, when administered, to a mild alkali. It preserves the alkalinity of the blood, and favourably affects the metabolism, used, of course, in reasonable quantities. Our analysis confirmed the claims made in regard to the composition of this water.

THE W.K. ICE MACHINE.

(BRYANT TRADING SYNDICATE, 8 AND 9, BROAD-STREET AVENUE, LONDON, E.C.)

So far the making of ice has not been brought within the region of domestic application, refrigeration for this purpose being usually dependent upon an ice-supply, of which the fishmonger is commonly the retailer. A proposal, therefore, to introduce a portable ice-making machine, independent of a supply of ice, is bound to attract considerable interest. We have recently seen the W.K. machine, which we find does its work well. It is constructed on well-known principles. The water is placed in a vacuum connected with a water vapour absorbent, of which strong sulphuric acid is a familiar example. The vacuum pump is simple in construction and can be worked without undue fatigue. In an experiment we witnessed, a couple of pints of water were placed in a carafe which was then connected with the apparatus. The wheel of the vacuum pump was then turned and in about three minutes ice began to form. Previously to this the carafe presented the usual appearance of a flask of water being cooled down—that is to say, moisture was deposited heavily upon it. After a minute or so the water boiled previous to ice forming on the surface. The formation of the first ice is rapidly succeeded by the freezing of the rest of the water. We were told that the apparatus will continue its work for quite a long period without any renewals, and then the only thing required to be done is to add fresh concentrated sulphuric acid. The principle of the machine is, of course, based entirely upon the rapid evaporation of water yielding up its latent heat in the process. Many applications will suggest themselves. It should be valuable in the hospital and sick room, while it can be used for cooling beverages and foods and for preserving perishable articles. The outlay, we understand, is about £10.

REGULIN BISCUITS.

(THE REGULIN SYNDICATE, LIMITED, 13, CULLUM-STREET, LONDON, E.C.)

We have before referred in these columns to the use of regulin in the treatment of constipation. It is composed principally of agar-agar, which swells into a soft mass in the alimentary tract, emerging unchanged in the fæces, which, owing to the presence of the jelly, acquire a large proportion of water, and so are softened and evacuated without difficulty. There is present, also, a small proportion of cascara sagrada. Regulin itself occurs in reddish-brown flakes, and is also prepared in the form of tablets. We have now received some specimens of regulin biscuits, which afford a convenient and palatable way of administering the remedy. They are of good texture but somewhat highly flavoured with vanilla.

A NEW SACCHAROMETER.

(ROBORAT CO., LIMITED, 23, CLOTH FAIR, ALDERSGATE-STREET, LONDON, E.C.)

This apparatus is an improvement upon a previous one designed by the representatives of this firm. The principle of the process is the fermentation test, the apparatus enabling a tolerably accurate measurement being made of the carbonic acid gas evolved by the action of yeast upon the sugar in urine. It consists of a generator and a mercury manometer. In the previous apparatus the mercury had to be emptied out in order to clean the apparatus for the succeeding test. This is now avoided by using a hollow glass stopper in which the urine and the yeast are placed. The stopper is then put into position. On completion of the test the stopper is withdrawn and the contents thrown away and the stopper washed. The apparatus is then ready for further experiment after, of course, adjusting the mercury column.

LITERARY INTELLIGENCE.—Messrs. Macmillan and Co. announce for publication in September the fourth edition of "Anæsthetics and their Administration," by Sir Frederic W. Hewitt, M.V.O. In the preparation of the new edition of this work, which has been thoroughly revised and brought up to date, the author has been assisted by Dr. Henry Robinson, anæsthetist to the Samaritan Hospital and to the Cancer Hospital.

THE LANCET.

LONDON: SATURDAY, JULY 20, 1912.

The National Insurance Act: The Medical Outlook.

THE National Insurance Act is now in force, although the demands of the medical men, without whose coöperation the measure will be practically ineffective, have not yet been met. This is the situation which we fully expected would occur when we pleaded regularly week by week during the closing months of last year for a delay in the operation of the measure while some of the difficult points at issue were cleared up. "So much has to be done," urged the whole of one of the great political parties, "that we must start doing it," the idea being that errors would be set right as they were discovered by actual experience of legislation. This, of course, is a very well-known policy, and sometimes is quite a reasonable one, for the hope that underlies it is that once a start is made and responsibility is assumed, a driving force is created, since what has been begun must be put through. Otherwise there is a risk of indefinite delay, every tentative proposal being negatived by counsels of perfection, possibly of an unpractical nature. But surely it is wise to find out how much there is to be done before passing an Act of Parliament to do it, and it is clear that the Chancellor of the Exchequer neglected this precaution. He knows more now; but it would be comic if it were not so serious that the Act should be regarded by its political friends as quite successful because it is only threatened with a breakdown in the matter of supplying medical benefits, the Government having failed to come to terms with medical men upon the two important matters of the income limit and the capitation fee. The claims of the medical men are indeed stated in the press and on platforms to have been met, because only the questions of the wage limit of the insured and of the proper remuneration of the medical man remain to be settled; and even this is not quite correct, for, greatly altered as the original proposals were while the measure was being hurried through Parliament, the substantial gain to the medical profession under the various amendments will not turn out very great. We think that the Chancellor of the Exchequer and his supporters must by this time regret the haste with which the measure was pressed forward.

One result of that haste is being curiously illustrated by the circumstances in which there has appeared Sir WILLIAM PLENDER'S report on the remuneration of medical practitioners in certain selected areas. This report made its appearance last week after THE LANCET was published, but as it was immediately distributed to the whole of the lay press we are sure that many of our readers will already have perused it. It appears in full upon page 195 of this issue. From the very beginning the remuneration of the medical practitioners must have been a thing worthy of consideration, and if time had been allowed there would have been no great difficulty in providing for a far larger and more convincing report than it was possible for Sir WILLIAM PLENDER to produce in the bare month at his disposal, and with the geographical limitations dictated by haste. The Government did not consider the possibility of taking such a step until this partial investigation was decided upon, which had necessarily to be made with the utmost speed. Then its results are made public when there is little time to discuss them properly; and, indeed, we do not feel quite sure that they have not been made public with undue promptitude. Sir WILLIAM PLENDER'S report as actuary in charge of the investigation into the work and remuneration of the medical profession in certain towns was delivered as a step in the negotiations between the National Insurance Commissioners and the State Sickness Committee of the British Medical Association, and it seems to us that the committee should have been allowed the opportunity of discussing the report before it was issued to the press. The document is distinctly instructive, but it does not prove the things that those who have been loudly abusive of the stand for fair-play made by the medical profession desire to make it prove. It fails to take into consideration in the total of visits made by medical men the great number of them which are purely charitable. It shows, with allowances to be made for the different conditions prevalent in one of them, what in five towns the average income of the practitioners is, and on investigation it stands out that Mr. LLOYD GEORGE'S offer has not the pecuniary advantages which he claims. That is all that it shows. As has been said over and over again, the contract work of the future must be far better paid than it has been in the past, because a vastly greater demand is to be made upon professional efforts; while it is absolutely necessary that the growing increase in the expenses of training and educating the practitioner should find recognition in his remuneration.

The report will not help the Representative Meeting of the British Medical Association, which begins at Liverpool this week, to the extent that was expected. As is well known, the British Medical Association will decide at the Representative Meeting which of the two courses it will pursue—that is, whether it will break off negotiations and call upon all members of the Association to refuse to work the Act, or will appoint a committee, presumably very much the same committee that has so far carried on the negotiations of the Association with the Commissioners, and give to that committee power to arrive at a provisional agreement. On the face of it Sir WILLIAM PLENDER'S report seems to make for peace, but that is hardly the way in which we ourselves regard it. It does not cover sufficient ground to alter the convictions of those who have signed the pledges of the British Medical Association, and its findings have been misunderstood, and used by the political press in an unfair way towards the medical profession. We have never disguised our regret that the fixing of a wage limit was made part of the terms of the British Medical Association. There is no doubt that this is the surest way to prevent absolutely the abuse of medical practice, but the feeling of Parliament, when an amendment

to fix a limit was proposed, was hopelessly hostile, and the Chancellor can always point to this fact. The difficulty of fixing upon a capitation fee is very great, but here, surely, all the arts of negotiation have not yet been exhausted. For this reason an unexpected decision on the part of the Representative Meeting to appoint the responsible committee whose intervention the Chancellor has invited has claims that must not be ignored. It does not seem to us right to say more until that meeting has been held. We are perfectly aware that the sentiments so vigorously expressed in the letter of Dr. WILLIAM RUSSELL, published this week in our columns, are shared by a very large portion of the medical profession. The medical profession is too firmly resolved upon securing justice to be led into unworthy compromise by fear of the issue. If the Representative Meeting decides to break off all negotiations at once, it will do so in the belief that the public can obtain upon coöperative principles agreeable to professional demands an adequate medical service. But that belief should surely be only more firmly founded after an interval for deliberation, and this would be gained even if a committee with provisional powers were appointed. The responsibility that has devolved upon the Representative Meeting is, indeed, a very heavy one.

Our Knowledge of Syphilis.

LAST week there came to a close a series of debates at the new house of the Royal Society of Medicine[1] which has attracted no small degree of notice. The subject was syphilis, and the debate was worthy of the importance of the subject. Never more than in the last few years has the medical profession appreciated the importance of this disease to those who have been infected with its virus, to the nation at large, and, in fact, to the whole human race. Never before has so much been known about the disease, and the recent introduction of new methods both of diagnosis and treatment made it highly desirable that the present state of our knowledge of the subject should be fully discussed by those most capable of giving an authoritative opinion; and, indeed, it would have been difficult, if not impossible, to gather together a more representative group of men than those who took part in the discussion. The interest that was felt in the debate was well shown by the large number of speakers and by the fact that it was found to be necessary to devote four days to the discussion. The discussion was not limited; it embraced the whole of syphilis—the question of the origin of the disease, its relative prevalence in former days and at the present time, its diagnosis, its relation to public health, and its treatment. Without wishing to find fault with the arrangements for a debate so successful as that which has just been held, we would venture to suggest that it might have been better to divide the subject into several different heads, for by so doing a clearer view might have been obtained of current opinion than was possible in a discussion where the debate moved with each succeeding speaker from one point of the subject to another. It were idle to attempt to sum up in a few lines the conclusions of four days' debate, but we will endeavour to set down the chief impressions.

Dr. NORMAN MOORE discussed the question of the time of origin of the disease. He showed that when the disease was first described at the end of the fifteenth century, it was agreed by all then competent to judge that it was a new disease; further he demonstrated that the absence of any signs of the disease in the bones taken from the graves of Egypt showed that in ancient Egypt the disease did not exist, and similar testimony from the old graveyards of America go far to show that the attribution to that continent of the starting point of the disease is unfounded. He, moreover, advanced new evidence against the existence of syphilis at the time of the Roman Empire, for in addition to the absence of any allusions to the disease in Latin writers, he pointed out that so acute an observer as GALEN had not described any of the nervous symptoms of the disease which are now generally called parasyphilitic, and he argued, and with his argument we concur, that if cases of tabes and of general paralysis of the insane had come under GALEN'S notice he would surely have recorded them; and since GALEN has said no word that can be interpreted as applying to these diseases the safe conclusion is that the disease did not exist in the Rome of his day. This aspect of the question is of no little interest, and may at any moment become of practical import, for it is quite possible that ethnological study, pursued under modern conditions, may play a part in our future schemes of treatment and even of diagnosis. Here several speakers testified to the great value of the Wassermann test, and it was generally agreed that a "positive Wassermann" was conclusive evidence of the presence of the disease even in the total absence of all manifestations. Stress was laid on the importance of syphilis of the nervous system, and it was shown that the Wassermann test demonstrated that, in addition to the parasyphilitic diseases, many cases of congenital idiocy and other nervous diseases in the young had a syphilitic origin. Though it was not possible to give the exact proportion of cases having this etiology, the more thoroughly cases of nervous diseases in the young are examined the greater the proportion of cases in which indications are obtained of a syphilitic origin. The discussion of the treatment of syphilis provided a proof of a change of opinion among medical men in response to our progress in therapeutics. There were a few speakers who still adhered to mercury as the most satisfactory drug for the treatment of the disease, but most of those who dealt with the therapeutics were agreed that in salvarsan we have a drug capable of removing rapidly the manifestations of syphilis, though it does not fulfil all the expectations aroused at its introduction. Two speakers had employed neosalvarsan, and spoke with approval of its capabilities. The opinion was expressed by several speakers that the use of these arsenical compounds should be combined with a mercurial treatment.

We look upon the debate as of great importance, for it has once more drawn attention to the very numerous results of syphilis, many of which were not thought to be syphilitic until a comparatively recent day; it has called notice to the widespread distribution of the disease

[1] THE LANCET, June 15th (p. 1610), 22nd (p. 1686), and 29th (p. 1756), and July 13th (p. 84), 1912.

to the great effect it has on the well-being of the race, and to the need existing for some attempt to restrain the extent of its prevalence. The exact form that legislation should take is not certain, but all who know the facts are agreed that there is urgent need for some action to be taken. The lessons from the debate seem to be that in the future we must treat syphilis more thoroughly than in the past; that we must suspect its presence in many cases where we have heretofore not looked for it; and, above all, that means should be taken to limit the extent of this the most direful scourge of comparatively modern times.

The Problem of Sanatorium Benefit.

IT will be remembered that on Feb. 22nd of this year a Departmental Committee was appointed by the Chancellor of the Exchequer to report at an early date upon the problem of tuberculosis, with special reference to prevention and cure, for the guidance of the Government and local bodies in making provision for sanatorium benefit under the National Insurance Act. This committee, with commendable promptness, issued an interim report two months later, which was referred to in these columns on May 4th. The despatch with which the matter was carried out was, of course, dictated by the fact that the Insurance Act laid down that sanatorium benefit should be available for insured persons from July 15th: the benefit is now due to the compulsory contributors to national insurance. In their report the Committee outlined very clearly a general scheme applicable to the whole country for the coördinated prevention, detection, and treatment of tuberculosis, and their recommendations, as was to be expected, for the most part have been agreed to by the Local Government Board and the Insurance Commissioners in joint conference.

The English Commissioners have issued a memorandum on the administration of sanatorium benefit, which we print in full elsewhere, for the instruction of the Local Insurance Committees set up under the Act; while the Local Government Board has simultaneously sent out a letter on the same subject to county and county borough councils, urging these bodies to prepare complete schemes for the treatment of tuberculosis within their areas, and pointing out that such schemes should relate not only to insured persons but to the whole population of those areas. It will be seen from the memorandum that the Commissioners recognise that the full system of sanatoriums and dispensaries suggested by the Departmental Committee cannot possibly be available for some time to come, except perhaps here and there in great towns where institutional treatment on a large scale has already been organised. They therefore propose that the local committees generally shall make temporary and provisional arrangements for the treatment of insured persons through existing agencies. This they are compelled to do because the Act, which came into force last Monday, carries an obligation to provide immediate sanatorium benefit; but to be under this necessity at a time when the Government is far from an understanding with the profession, whose coöperation is essential for the giving of sanatorium benefit, is a source of profound embarrassment to the Commissioners. The working of the part of the Act dealing with sanatorium benefit was excepted from the pledges given at the request of the British Medical Association, but a strong feeling has grown up that the acceptance of appointments under this part of the Act will be construed as a weakening of the opposition of the profession to the other provisions. The result is that the Chancellor's recent claim that an immediate beginning to the national crusade against tuberculosis can be effectively made does not hold good. No doubt the Commissioners would have much preferred that sanatorium benefit should be postponed or replaced for the first six months by maternity benefit, as was suggested by Mr. ASTOR, the chairman of the Departmental Committee on Tuberculosis, in the House of Commons on July 11th. But whatever the reason, it is regrettable that the issue of the memorandum of the Commissioners should have been delayed until the last moment, when it is considered how little advanced are the preparations for carrying out this part of the national insurance scheme. Now and henceforth that which Mr. ASTOR described as "makeshift sanatorium benefit" has to be administered, and we confess that we do not see how it can be done.

It is satisfactory to find that some sort of organisation for this purpose has been proceeding in various counties, and we trust that this course will be pursued elsewhere, so that when the Representative Meeting, to be held in Liverpool this week, has decided what course it will urge upon the members of the British Medical Association, the least possible delay in getting to business will occur. For example, we have received from Dr. W. J. HOWARTH, the county medical officer of Kent, two reports which have been approved by his county council. The first deals with general principles, and is meant to form the basis of a future permanent scheme; the second supplementary report indicates the first steps which the Kent county council is prepared to take in the matter in view of the early coming into operation of sanatorium benefit. The temporary arrangement, ably sketched out by Dr. HOWARTH, is intended to allow enough work to be done in the early months to produce reliable information for the subsequent discussion of permanent methods. The preliminary steps of this kind which various medical officers have undertaken suggest that there is a widespread feeling that sanatorium benefit can be worked by medical men without interference with the pledges that have been signed; but it must not be forgotten that the course of events in the near future may produce a different spirit in the medical profession. On the other hand, if examination and experience should show that sanatorium benefit can be administered for the good of the community and with professional credit, the disposition on the part of medical men to continue negotiations with the Commissioners upon the other medical provisions of the Act may be strengthened.

RESEARCH HOSPITAL, CAMBRIDGE.—Mr. Otto Beit has generously sent a cheque for £500 towards the Endowment Fund of £8000 which it is hoped to raise for this hospital.

Annotations.

"Ne quid nimis."

MEDICAL INSPECTION OF SCHOOL CHILDREN AND THE FEES OF POOR-LAW MEDICAL OFFICERS.

A POINT of considerable importance to Poor-law medical officers generally has recently come to the fore—viz., the powers of boards of Poor-law guardians to pay extra fees for operations on children submitted to Poor-law medical officers for that purpose, in consequence of recommendations made by school medical inspectors. Dr. J. K. Willis, of Cranleigh, recently brought to the notice of the Hambledon (Surrey) board of guardians the fact that the relieving officer for the district had referred to him cases of children requiring treatment for enlarged tonsils and adenoids as a result of the medical inspection carried out in the elementary schools. He stated that such cases had hitherto been treated at the hospitals, but they were now no longer eligible for treatment at these institutions, and he asked if the guardians were prepared to pay a reasonable fee for treatment in such cases. He suggested 10*s.* 6*d.* for the operation and 10*s.* 6*d.* for the administering of an anæsthetic. The guardians communicated with the Local Government Board on the subject, and at a meeting of the guardians on July 11th a reply from the Local Government Board was read in which it was pointed out that the general responsibility for the administration of Poor-law relief rested with the guardians. The Local Government Board held that if an order for medical relief was given by the relieving officer in any case of the kind, the district medical officer should examine the child, and if he considered that an operation or special treatment was necessary, he should report the circumstances to the guardians. It would then rest with the guardians to decide whether the case was one for relief at the cost of the poor-rates, and if so whether they should authorise their medical officer to proceed at his discretion or should take further advice. If an operation or special treatment was necessary and was carried out by the medical officer, with the approval of the guardians, the Local Government Board recognised that, although no fee was legally payable under the regulations, a reasonable gratuity should be given for the services so rendered. The Board would be prepared in such cases to allow a gratuity of 1 guinea in respect of each operation for the removal of tonsils and adenoids, as suggested by the Hambledon guardians, but such gratuities should be reported individually for the Board's sanction. Sir William Chance, Bart., a well-known authority on the Poor-law, and one of the guardians, expressed his gratification at the Local Government Board's reply, because he had always held that boards of guardians had power to give relief in these cases, and that it was quite unnecessary to refer the matter to any other authority. He thought that the medical men were justly entitled to the extra remuneration in such cases, and he wished that the Local Government Board's letter could be published generally, because it made clear what the powers of guardians were in the matter. The guardians decided to send particulars of the letter to the medical officers of the union. The various developments in State medicine that have taken place of late years are imposing additional burdens on the medical profession in all directions, and it is a matter for congratulation whenever its claims to remuneration for these additional services are officially recognised. Poor-law medical officers are under an obligation to Dr. Willis for calling attention to this matter and being the means of effecting an official recognition of their rights.

PRECAUTIONS AGAINST FIRE IN CROWDED HEALTH RESORTS.

THE question of what provision there is for an effective defence against fire in many of our health resorts, which will shortly receive a very large influx of visitors, has a grim interest at the beginning of the holiday season. Some of these places, at all other times in the year small, become during August and September crowded like large towns, and enormously increased in proportional population. There probably will be in most cases no more means of protection offered than is provided for the village which during the rest of the year the place resembles. At this time the risks of fire are increased, but the means of extinction remain the same. In properly equipped modern hotels there is, of course, an installation of hose-pipes, but this is impossible in the country house, farm, or cottage, and very often the source of water-supply there is a well. It seems to us that very simple precautions can be adopted for which some day there might be a cause for thankfulness. There is no reason, for example, why the simple, old-fashioned method should not be adopted of keeping a bucket or two full of water on each landing of a house during, at all events, the holiday season. This has often served successfully to stifle the beginnings of a fire which there was every reason for believing would otherwise have led to calamity and damage. Another method, where possible, would be to leave the garden hose attached to the supply pipe, and have it, especially at night time, in such a position and place as to be immediately available in case of an outbreak. The precautions are not ridiculous, nor do we draw attention to them with the slightest intention of inspiring a scare. But we all are aware how often it happens to be wise after events.

PURPURA FULMINANS AS A SEQUELA OF SCARLET FEVER.

IN the *British Journal of Children's Diseases* for April Dr. T. McCririck has reported a case of a very rare sequela of scarlet fever—purpura fulminans. A well-nourished boy, aged 5 years, who had previously been healthy, was admitted on Dec. 12th, 1911, into the Grove Fever Hospital desquamating from scarlet fever. The heart was sound and there was no oral sepsis. During the next four days he appeared to be quite well and took full diet. On the 17th he vomited greenish fluid and did not seem well in the afternoon. During the night his sleep was fitful, and about 4 A.M. a mark like a bruise appeared on the left buttock. Others soon followed on the left thigh and leg, and later on the right thigh and leg. At 9 A.M. he looked ill, and the face and lips were pallid. The pulse had risen to 140 and the respirations to 28. On the left buttock and lower limbs were dark purple elevated ecchymoses. The larger ones developed in rings with a central area of normal skin which gradually became encroached upon till at 7 P.M. the whole presented one great black patch. Four hours later the patches had not further enlarged, but the skin of the unaffected regions had the yellow waxen appearance of grave anæmia. The left foot and leg were much swollen, and the pulse was very feeble. During the night the child was restless, but his mind remained clear till death, which occurred at 5 A.M., 25 hours after the onset of the

ecchymoses. On the 18th the urine, hitherto clear, contained a cloud of albumin. The necropsy showed that the ecchymoses extended to the deep fascia covering the muscles. All the organs were very pale. There was no clot in the heart chambers, the blood being thin and fluid. There were no hæmorrhages in the suprarenals or other organs, but there was a small hæmorrhage into the connective tissue around the outer aspect of the left kidney. Agar and broth cultures from the heart chambers and from the ecchymotic tissue remained sterile. Microscopic section, of the liver and kidney showed nothing abnormal. Blood examination ten hours after the onset of the purpura showed hæmoglobin 65 per cent.; red cells, 3,670,000; numerous microcytes; slight poikilocytosis; no normoblasts; white cells, 15,700. A differential count gave polymorphonuclears, 86 per cent.; small lymphocytes, 7 per cent.; large mononuclears, 4 per cent.; eosinophiles, 0·5 per cent.; myelocytes, 2·5 per cent.; and mast cells, 0. Purpura fulminans is a very rare condition. Of 64 published cases it has followed scarlet fever in 17, usually in the seconds third, or fourth weeks. In the present case there was no doubt of the diagnosis of scarlet fever, not only because of the history and well-marked desquamation, but also because the boy's two sisters were admitted with typical attacks on Dec. 13th and 14th respectively.

THE FATAL TOLL OF MOTOR TRAFFIC.

THE number of street accidents is rising day by day, and the pedestrian in a crowded city has to keep a sharp look-out in order to cross the streets in safety. Traffic in London, for example, is becoming so complicated by diversity of speeds that the foot passenger often finds it difficult to adapt his pace to that of the different vehicles. It is easy to avoid an approaching motor vehicle when it is seen, but the adroitness with which this can be done may be entirely defeated by the sudden appearance of a bicycle darting silently in and out of the traffic. The fast service cyclists in the City of London are thus indirectly a very fruitful source of accident, and if any scheme of fresh control of the traffic of the streets is meditated—and we think it is urgently called for—we believe that the first important step would be to regulate the presence of bicycles in congested thoroughfares and busy cross points. We believe that this view is shared by the police, who, after all, must be regarded as our best authorities on the subject. The introduction of motor vehicles has produced, of course, a complete revolution in street traffic, and it is obvious that the streets which answered the purpose of horse-drawn traffic, even with its enormous expansion, are ill adapted to the excessive demands placed upon them by motors. Their lines, their narrowness, and their sharp intersections, together with the potential speed of the motor vehicle, are, generally speaking, inconsistent with safety. The present refuges were constructed to help the pedestrian when there was not a motor vehicle on the thoroughfares, and it is conceivable that a reconsideration of the function, position, and plan of these safe islands might lead to a reduction of the terrors of the street. A large proportion of the motor traffic of London consists of motor omnibuses. Since the improvements that have been made in these vehicles by which they are less offensive on account of noise and smell, and more comfortable to travel in because vibration has been reduced, the public have appreciated them, and to many no doubt the motor omnibus is a great convenience. But while they are a quick means of getting about their speed advantage is often a source of annoyance. There is some force in the suggestion that motor omnibuses, like tram-cars, should have compulsory stopping places at certain points, and it would be a great gain to the public safety if at all stopping places refuges were placed in the road, since, when the omnibus stopped there, the opportunity of crossing the street with safety at that point would be great. In the immediate neighbourhood of these stopping places motor-cabs would soon find it necessary to slow down, and in this way two sets of dangers would be removed. We realise the difficulties which the various kinds of vehicles using crowded streets have introduced into the problem of urban traffic, and the fatuity also of making suggestions without a complete knowledge of the complex circumstances which surround the question, but the fatality toll of the motor vehicle is becoming a very serious matter. The time has arrived, we think, when close consideration should be given to the fact that there is now running in our streets a fast and dangerous traffic for which these streets were never constructed. The metropolis bids fair to excel the other cities of the country in its risk to the life and limb of pedestrians, and for this reason the question should receive practical consideration in London. Again, any remedial measures which prove effective in London will certainly work well in less crowded places and under simpler conditions.

THE CARE OF HOSPITAL RECORDS.

HOSPITAL records form the most important part of the data of the clinician, but when he desires to investigate some subject much time and trouble may be wasted in the search and valuable information may be missed in consequence of want of system in filing. In the Northwestern University Bulletin for May Mr. E. M. Funkey, keeper of the records, has described a method which has been in use for two years in the Wesley and Presbyterian Hospitals, Chicago. It has the great merit of simplicity, and has, therefore, been used by the staff with facility. Three catalogues are made—one for the names of patients, one for medical cases, and one for surgical cases. For general reference the name catalogue is especially valuable, as some hospital officers always ask for the history of the patient by name. If the name is forgotten the diagnosis may be remembered and the case can be found in the diagnosis catalogue. For each history two cards are made out—first the name card upon which are given the patient's name, address, case number (under which the history is filed), dates of admission and discharge, diagnosis, result, and name of the physician or surgeon. This card is then filed alphabetically under the patient's name. If the patient is readmitted the further entries are put on the old card, thus showing at a glance when he has been in hospital. The second card is made for the diagnosis catalogue, and besides the data on the first card gives brief description of any operation performed, and if any complication occurs this is also noted. For the complication a third card is made out under its own heading. After the histories are thus catalogued they are put in separate manilla envelopes, with the "case number" in the upper left-hand corner and are placed numerically in vertical files. Each patient on admission is given a "case number" by the admittance clerk, which is put on his history sheet. As this number is given on all the catalogue cards it is a simple matter to consult the catalogue, obtain the case number, turn to the files, and get the history. The cards in the diagnosis catalogue are arranged according to Dr. Post's "Nomenclature of Diseases and Conditions," in which entries are grouped primarily under the different systems and secondarily under anatomical parts, in alphabetical order. Thus the cards referring to all the diseases

of an anatomical system, or of an anatomical part, can be found at a glance. The catalogues have proved valuable both for medical research and for finding any particular record. For example, an investigator wishes to look up all the cases of cholelithiasis. He is referred in the surgical catalogue to the group of cards on the digestive system. Under the heading of "Gall Tracts," printed on a buff guide card, he will find an alphabetical arrangement of diseases. Filed behind the guide card bearing the name "Cholelithiasis" are the cards of all the cases of this disease arranged chronologically, so that a list of references of the cases for any one year or term of years can easily be made. It is then only the work of a few moments to turn to the files and take out the histories. Similarly, if an investigator is working at the subject of typhoid perforation he goes to the medical catalogue and under the heading "Infectious Diseases" finds the subheading "Typhoid." In the cases in which perforation has occurred this complication appears on the cards, as well as notes of an operation when one was done. Some such system is worthy of general adoption, but we would add a criticism. The distinction between medicine and surgery is purely artificial, and a physician may find the information of which he is in search in a surgical case and *vice versâ*. It therefore seems better to abandon the division into medical and surgical cases, and simply to arrange all diseases on the anatomical basis described above.

THE PRESERVATION OF RABIES VIRUS.

THE value of Pasteur's prophylactic treatment in the case of bites from rabid animals has long been established beyond the possibility of cavil, and institutions for the preparation of the vaccine and for the administration of the necessary injections have been founded in many countries where the disease is prevalent. Up to the present it has been found impossible to preserve the activity of the virus for any length of time, and consequently the treatment has had to be carried on at such institutions alone, sufferers being under the necessity of making pilgrimages to these centres and thus undergoing considerable delay before receiving the remedy. It is therefore much to be desired that some method should be devised for preservation of the virus, so that it may be suitable for delivery to all parts in the same way that other vaccines and serums can be sent, for the use of patients at their own homes. It was shown some years ago by Vansteenberg that if the virus is dried *in vacuo* it may retain its potency for some months, and during the current year D. L. Harris and L. F. Shackell have recorded improvements in the procedure. In the most recent paper published by the former in the *Journal of Infectious Diseases* for May the following method is recommended. The brain or cord of the rabid animal is ground up with water to a smooth paste, and this is mixed with carbon dioxide "snow," and thus frozen hard. The brittle mass so obtained is ground to a fine powder with a little more of the "snow," and is then placed in a beaker with a vessel of concentrated sulphuric acid within a vacuum jar half immersed in a freezing mixture of ice and salt. Thorough drying is thus effected in 36-48 hours. The dry powder is finally sealed up in suitable quantities in glass tubes. Its virulence is such that 1/50 mgr. of cord or 1/200 mgr. of brain constitutes a dose lethal to a rabbit in 6-7 days, and its immunising powers are very satisfactory. Injections of 1000 minimum lethal doses were borne by a man without ill-effect, and the material has been since employed for treatment of sufferers from bites of rabid animals. Harris claims that at the low temperatures used no loss of virulence occurs, and that subsequent loss is so slow that the material can be standardised for accurate dosage. If his observations are confirmed it would seem that an important step has been taken towards simplifying the treatment of those threatened with hydrophobia, which will be rendered possible on the spot without loss of time and expenditure of money on lengthy journeys.

CONDITIONS WHICH FOSTER ENDEMICITY OF ENTERIC FEVER.

EXPERIENCE has demonstrated that the epidemicity of enteric fever is fostered by various conditions, but largely by local insanitation and more particularly by defective methods of excrement disposal. A recent illustration of this is furnished in the *Supplement to the Jamaica Gazette* of June 6th, in which is published a very interesting report, prepared at the request of the Governor, Sir Sydney Olivier, K.C.M.G., by Dr. Angus Macdonald and Mr. R. S. Turton, upon the conditions which had led to the continued prevalence of enteric fever in Jamaica in recent years, especially in the city of Kingston and its suburbs. It appears that since 1907, the year of the great earthquake which disorganised much of the public sanitary works of the island, there has been an increased incidence of the disease. For various reasons definite information as to the actual amount of the prevalent malady has been difficult to obtain outside Kingston and the adjacent districts. In that city, with a present population of about 60,000, during the five years 1907 to 1911 there have been notified 1045 cases, of which 455 proved fatal, giving the high case mortality rate of 43·5 per cent. In addition there were 313 other deaths certified in Kingston during the same period from "undistinguished fever," most of which is believed to have been enteric. The high case mortality suggests that many other cases must have occurred, unrecognised or perhaps intentionally concealed. In this connexion it is noteworthy that the native population in many instances prefer in sickness to consult unqualified medical men rather than the regular practitioners. It is also stated that a number of the fever cases sent to the general hospital arrived there in a moribund condition. There is, therefore, a possibility that faulty diagnosis, followed by improper treatment and lack of skilled nursing, helped to augment the fever mortality. There was no marked epidemic during the five years period, but rather a continual prevalence, month by month, with slight exacerbations each year in June and November. No evidence was discovered to incriminate the public water-supply of Kingston, nor was there reason to attribute spread of the disease to milk or to the consumption of shellfish. Some of the cases upon bacteriological examination showed the presence of bacillus paratyphosus A, but Dr. Macdonald, who specially investigated the Kingston cases, says that "for the purposes of preventive medicine it is essential that these paratyphoid cases be regarded as enteric." Both Dr. Macdonald and Mr. Turton, the latter of whom dealt specially with the disease in the suburbs, particularly in the parish of St. Andrews, emphasised the influence which neglected sanitation exerts in fostering the endemicity of enteric fever, and they also drew attention to the evil results of personal uncleanliness. It is pointed out that the infection, directly or indirectly, comes from a human source, whatever may be the vehicle by which it is conveyed; it is therefore in the habits and surroundings of the population that danger arises. Observation proves that where sanitation is bad the habits of the people become affected to some extent thereby; and, on the other hand, the converse is true. Where, for example, water-closets have been substituted for unwholesome privies there has generally followed a perceptible improvement in the habits of the people concerned, and their general health has been improved. Clean surroundings, in fact, usually suggest clean

habits. In Kingston few fever cases occurred among the better classes, but where such a case was reported inquiry generally traced the infection to the servants and their relations in the town. The result of careful investigation by Dr. Macdonald and Mr. Turton was to show that in Kingston and its suburbs the incidence of enteric fever was associated with dirty and untidy houses in crowded yards. Many of these houses consisted of a single room in which every domestic duty was performed and in which not unfrequently articles of food or drink were prepared and stored before being purveyed in the streets or in the markets. Several groups of cases were attributed to the consumption of bread which had been cut and handled by persons whose hands had become specifically infected. The clothing as well as the persons of those living in the affected yards were often found dirty and neglected. In the average yard where enteric fever was reported Dr. Macdonald says that scarcely one had a closet which could remotely be called satisfactory. "In not one was a proper supply of paper provided, and though some paper had obviously been used there never seemed a sufficient proportion to have ensured cleanliness; nor is it discoverable that in the general population any other custom of toilet prevails." The open closet, pail privy or pit, stands condemned in the opinion of Dr. Macdonald, no matter how its danger comes about. In this view we concur. The late Sir Richard Thorne Thorne said of the midden privy, in one of his official reports, that it was "nothing short of a relic of ignorance and barbarism which ought not any longer to be imposed upon any civilised community." It is admitted that enteric fever cannot be spread by a privy unless the specific poison has been deposited in it, but in the light of modern discoveries regarding mild ambulatory cases, the occurrence of the disease in infants, and the existence of carriers, it is impossible, as Dr. Macdonald points out, once the malady has been introduced into a community, to be certain of its movements. Obviously the appropriate remedy is to be sought in maintaining a high standard of general sanitation and in educating the people till their habits are scrupulously clean and above all suspicion.

LEGISLATION IN REGARD TO FLANNELETTE.

UNDER the auspices of the National League for Physical Education and Improvement a petition is to be presented to the Home Office shortly praying that the Home Secretary may think fit—

(*a*) To take early steps for bringing about an amendment of the Merchandise Marks Act, 1887, by adding a provision making it penal to describe as uninflammable, material which will not stand certain prescribed tests, such amendment having been recommended by the report of the Departmental Committee as already referred to in this petition; (*b*) to make public the nature of the tests to be prescribed by any such amendment of the Act before the introduction of the amending Bill; and (*c*) to include in the amendment of the Act either an absolute prohibition of the use of the word "flannelette," or else a prohibition against such use unaccompanied by wording to show that the material is made of cotton only.

The suggestions embodied in this petition agree very well with those made by ourselves in a practical inquiry into the subject, the results of which were published in THE LANCET exactly a year ago. A letter recently received by us from Bishop Boyd Carpenter, the chairman of the executive council of the League, shows agreement with the classification which we adopted as the result of making tests upon specimens of flannelette bought in the open market. There are, says the Bishop, roughly speaking, three classes of material which are sold under the common name of flannelette, but they differ very widely from one another in quality, appearance, and inflammability. There is a material which has been subjected to a process that renders it nearly, if not completely, non-inflammable. This material has been known to keep its non-inflammable character for some years, though it has been constantly washed with soap and water; it only tends to lose its non-inflammability if washed in water without soap. There is next a material which has not been submitted to this safety process, but which possesses such a smooth and polished surface that, though it can hardly in fairness be dubbed easily inflammable, it is not more likely to take fire than strong canvas or sturdy shirting. Lastly, there is the soft fluffy material which is highly inflammable and burns quickly. We agree with Bishop Boyd Carpenter that the very existence of these different classes of material calls for legislative discrimination, and this can be done without affecting seriously the interests of the trade, while affording protection to child life. The petition has our best wishes. It is clearly necessary, however, that the starting-point of legislation should be a standard official method which it is agreed decides fairly when a material is safe or unsafe. The question also arises as to whether the term "flannelette" should be compulsorily suppressed. As fabrics there is nothing in common between flannel and flannelette; the first is a woollen material and the second is cotton.

THE EFFECTS OF TEMPORARY COMPLETE STOPPAGE OF THE CIRCULATION IN MAN.

Dr. René Sand of Brussels records in the *Wiener Klinische Rundschau*, Nos. 1 and 2, 1912, his observations upon a case of apparent death under chloroform in which cardiac massage and the intravenous injection of normal saline solution produced after the lapse of an hour resuscitation with a survival of nine days. The patient was 15 years of age and was apparently dead when the above measures were applied. The recovery was only partial, as consciousness was never regained. The patient remained in stupor, cried out, had grinding of the teeth and incontinence of urine. After the lapse of nine days hyperpyrexia developed and was followed by death. The necropsy revealed œdema and congestion of the central nervous system, with systematically grouped degeneration of certain nerve cells. There were also venous thromboses in the right kidney, inflammatory changes in the endocardium and in the subendocardial tissues, congestion of the liver with fatty and biliary infiltration, very marked engorgement of the lesser curvature of the stomach (produced by the massage of the heart) and œdema and congestion of the lungs. From a study of this case and of others of like character recorded in man and animals, Dr. Sand arrives at some interesting, noteworthy, and practical conclusions. He states that the brain of man and other mammals can withstand complete cessation of the circulation for as long as 25 minutes. After a longer period than this the brain may recover its functions partially or even completely, but death is inevitable, and even a shorter period may result in death. Dr. Sand therefore advises resorting to cardiac massage as quickly as possible, and states that no case is on record in which massage of the heart commenced after the lapse of 15 minutes has resulted in lasting recovery. The organ in man and animals which is most sensitive to anæmia is the brain, and then the following structures in descending order: the spinal cord, medulla oblongata, kidneys, testes, nerves, striated muscle, heart, tongue, uterus, cornea, œsophagus, intestine, spermatozoa, red blood

corpuscles, blood vessels, cartilage, epithelium, and leucocytes. In man the lesions produced by anæmia are more marked in the sensory cells than in the motor and more in small cells than in large ones. The scale of resistance in the cells is stated to be as follows: Purkinje's cells, the cells of the cortex other than in the motor region, the optic thalamus, the caudate nucleus, the sensory and commissural cells of the medulla and spinal cord, the cells of Clarke's column, the spinal ganglion cells, intracardiac ganglia, the olives and the motor cells of the medulla and spinal cord. The cells of the nucleus ambiguus of the vagus appear to be the most resistant. In man the changes begin in the neuro-fibrils and in the nucleoli, then Nissl's granules are affected, while the lesions in the cytoplasm spread centrifugally. Secondary neuronophagy by glia cells can also be observed. In the kidneys the convoluted tubules are the most sensitive, then the straight tubules, and afterwards the glomeruli. In the spleen temporary stoppage of the circulation gives rise to destruction of red blood corpuscles. Dr. Sand finds that the tissues of man and animals are about equally resistant to anæmia induced by circulatory stoppage. These observations are of considerable interest and value as a practical contribution to the study of the subjects of cellular survival and of resuscitation after apparent death.

THE ROYAL SOCIETY'S 250TH ANNIVERSARY.

DURING the present week the scientific world has united to pay honour to the Royal Society, whose first charter was signed 250 years ago. The celebrations began on Monday evening with a reception at Burlington House; and on Tuesday, after the service at Westminster Abbey, the 300 delegates from the British Isles, the Over-sea Dominions, and foreign countries were formally received by the President, when they presented their addresses of congratulation to the foremost scientific body in the Empire. As Sir Archibald Geikie pointed out, in replying to the toast of the Royal Society at the commemorative banquet that evening at the Guildhall, when the society was founded it was the only scientific society in the country, but since that time the progress of science had necessitated that every great department of research should have a society of its own; nevertheless, the Royal Society, by welcoming communications in all branches of natural knowledge and electing into its Fellowship the leaders of the other special societies, still remained the one great representative scientific society in the country. Among the various social functions arranged to celebrate the occasion was a garden party on Thursday at Windsor Castle given by the King and Queen, and a brilliant conversazione on Wednesday night at Burlington House. His Majesty had already shown the interest he takes as patron in the Royal Society and its work by receiving the president and treasurer at Buckingham Palace on Saturday last and accepting copies of the memorial volumes prepared to commemorate the 250th anniversary of the society's corporate existence. The Royal Charter was granted by Charles II. on July 15th, 1662. From the very beginning the Royal Society has had close associations with the profession of medicine; among the group of scientists in which it had its origin were several physicians, and the long roll of Fellows contains the names of many distinguished medical investigators, while five members of our profession have held the office of president. Several medical bodies were represented among the delegates who presented addresses this week, and to their congratulations may be added those of the whole medical profession throughout the world.

A CATHETER KNOTTED IN THE BLADDER.

Dr. William J. Anderson, night warden of the Cook County Hospital, Chicago, reports in the *Journal of the American Medical Association* for June the case of a Russian, aged 35, who had been advised by a medical man to use a soft rubber catheter for the relief of urinary retention, several months before his admission to the hospital. After using this catheter several times he lost it. On the day of his admission he bought a section of rubber tubing, cut one end obliquely, and passed this home-made catheter through the urethra into the bladder. Urine was withdrawn, but not so the catheter, which refused to budge. He was able to pass a little bloody urine by the side of the catheter, but no more came through it after the initial discharge. When he was admitted the tube could be felt within the urethra, in front of the prostate, by rectal examination; but it could not be withdrawn by traction on the portion, 4 inches in length, which projected from the meatus. A radiograph revealed the reason: the tube was knotted in three loops. The bladder was opened above the pubes and the tube cut through; the straight portion was drawn out through the urethra, the knotted loops being removed with a pair of forceps. The patient recovered from the operation without mishap. Dr. Anderson says that a maritime expert who has examined the tube cannot place the knots among any of the 30 varieties recognised by the United States Marine Service, so that the man's claim to singularity is likely to remain unchallenged, for some little time at any rate.

IT is announced that Sir Patrick Manson, F.R.S., will retire from the post of medical adviser to the Colonial Office in London on August 15th. The duties hitherto discharged by Sir Patrick Manson will in future be divided, and the Secretary of State for the Colonies has appointed Sir John Rose Bradford, F.R.S., to be senior medical adviser, and Dr. C. W. Daniels to be junior medical adviser, to the Colonial Office in London, from the date of Sir Patrick Manson's retirement. The Secretary of State has also appointed Dr. W. T. Prout, C.M.G., late principal medical officer, Sierra Leone, to be medical adviser to the Colonial Office in Liverpool. The King has been pleased to give directions for the appointment of Sir Patrick Manson, LL.D., M.D., F.R.S., K.C.M.G., Medical Officer to the Colonial Office, to be a Knight Grand Cross of the Order of St. Michael and St. George in recognition of his eminent services in connexion with the investigation of the cause and cure of tropical disease.

AT a special meeting of the Ophthalmological Society of the United Kingdom held on July 11th for the purpose of considering the question of amalgamation with the Royal Society of Medicine, a proposal in favour of amalgamation, unanimously supported by the council, was put before the meeting. The following amendment was carried by a majority of 11 votes:—

That this meeting views with sympathy the proposal to form an Ophthalmological Section of the Royal Society of Medicine, and it is desirous of removing any obstacle thereto, and therefore requests the council of the Ophthalmological Society to consider the advisability of so altering its rules that all its meetings may be held each year during the course of one week, as is done by other national ophthalmological societies.

Professor Edward Malins, who has held the chair of Midwifery and Gynæcology in the University of Birmingham and in Mason's College for the past 18 years, has announced his resignation of this post, and in so doing has generously presented a cheque for £1000 towards the general expenses of the University.

OBSERVATIONS ON THE NEURON.

BY HARRY CAMPBELL, M.D. LOND., F.R.C.P. LOND.,
PHYSICIAN, WEST END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM.

II.[1]

The Axon Sheaths.

The medullary sheath.—We have now to consider the sheaths of the axon. Among mammals, with few exceptions, all axons and their collaterals receive a medullary coat. Among the exceptions are the short-axoned neurons in the central nervous system and the post-ganglionic neurons of the autonomic system. The medullary sheath (Fig. 17) begins at a short distance from the origin of the axon and ceases when its area of distribution is reached and the constituent fibrils begin to separate and ramify (Figs. 6, 8, and 9). At intervals, known as the "nodes of Ranvier," the medullary sheath is interrupted. The neurolemma does not, as once thought, come into contact at these nodes with the axon, but is separated from it by a disc of homogeneous protein material. Ranvier's nodes are very marked in the cerebro-spinal nerve-fibres; they are less obvious, though quite unmistakeable, in the medullated fibres of the central nervous system. It is at them that collateral branches are given off in the central nervous system, and that the fibres of the motor and sensory nerves give off their peripheral branches (Figs. 6 and 8). It will be observed that the nodes cut up the medullary sheath into a series of cylinders. Each of these, again, appears to be made up of separate cylinders placed end to end, their junction being indicated by the oblique *clefts of Lantermann.*

FIG. 17.

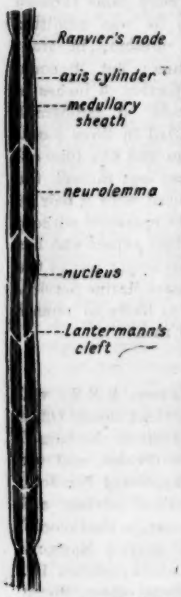


Diagram of medullary sheath and neurolemma.

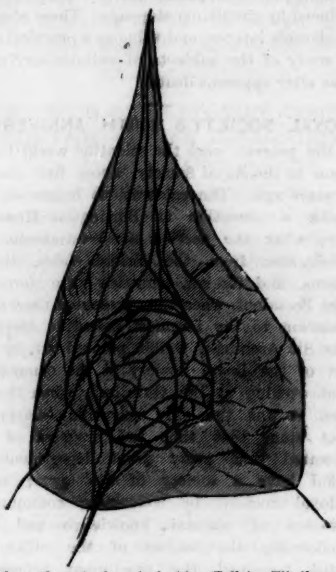
The axons of different systems of neurons medullate at different periods. How far the medullary sheath is the product of the axon, and how far of the neurolemma, is doubtful. On the one hand, the neurolemma in the central nervous system is so rudimentary as barely to be visible, a fact which suggests that this membrane is not the source of the medullary sheath; on the other hand, it appears to be essential to the myelination of the regenerating axon after section of a peripheral nerve.

The neurolemma.—All the nerve-fibres—motor, sensory, and autonomic—outside the central nervous system are provided with a well-marked neurolemma (Fig. 18), but in the case of the fibres of the central nervous system the neurolemma is rudimentary. In the case of the medullated fibres of the motor and sensory nerves it consists of a nucleated membrane, made up of a long series of segments joined together at the nodes of Ranvier. Each such segment is developed from a single cell, and is furnished on its inner aspect with a nucleus embedded in granular protoplasm. Thus, while the neuron proper consists of a single cell only, the neurolemma of a single axon may he made up of a large number of distinct cells. In the case of the non-medullated post-ganglionic fibres the nuclei stand out prominently, while the membrane is so delicate as barely to be discernible. The neurolemma is unstainable and it resists the action of dilute acids and alkalies. It is known to take a prominent part in the regeneration of the peripheral portion of a severed nerve-fibre, and the inability of the medullated fibres of the central nervous system to regenerate after their severance was formerly explained on the assumption that they are devoid of any neurolemma, though they are now known to possess a rudimentary one. Ross Harrison has shown that when the neural crest is removed from the embryo frog neither the neurolemma nor the peripheral sensory neuron develops. This shows that both alike are developed from the ectoderm.

The function of the medullary sheath.—It is generally supposed, even by Cajal himself, that the function of the medullary sheath is to insulate the contained axon, and thus prevent the lateral diffusion of nerve-impulses from one axon to another. There are, however, many reasons for doubting this view. Not only are the neuro-axons of the invertebrata, but the majority also of those of fishes, reptiles, and batrachians, devoid of a medullary sheath. Moreover, even in mammals non-medullated fibres are met with; the posterior ganglionic fibres of the autonomic system, the fibres of the olfactory tract, the ascending fibres of the cerebellar "granules," and the long axons of the "granules" of the fascia dentata are instances in point. There is, in fact, no proof that nerve-impulses tend to pass by diffusion from one axon to another.

I suggest that an important function of the soft, cushion-like medullary sheath is to protect the delicate axon, not only against injury, traumatic or toxic, but also against the action of stimuli, mechanical or chemical, likely to evoke nerve-impulses. It has to be remembered that though the neuro-ceptors (periphero-, somato-, and dendro-) are the

FIG. 18.



Neuron from the spinal cord of adder (Tello). Fibrils are seen passing from the neuron processes towards the nucleus and forming a peri-nuclear network.

sites *par excellence* of the generation of nerve-impulses, the entire axon is, when powerfully stimulated, capable of generating them.

The neuroglia.—The neurons of the central nervous system are kept in position (*a*) by the ramifying processes of the ependymal epithelium lining the central cavities; and (*b*) by the neuroglia. Cajal contends that the essential function of these two tissues is to secure insulation. He urges that it is just in those parts of the grey matter where insulation is most demanded that the neuroglia is most abundant. Against this has to be set the fact that neuroglia is abundant in the white matter of the brain, where insulation, if required, is amply provided for by the medullary sheath, and I suggest that their essential function is just that of connective tissue—i.e., to maintain the various parts of the neuron in proper position, especially at the synaptic junctions. It is, above all, necessary that the mittors and ceptors of the central nervous system shall maintain their proper relation to one another, for only by their orderly interaction can the normal coördinating activities of the nervous system be maintained.

Neuro-fibrils.

By means of suitable staining the presence of fine fibrils may be demonstrated in the neuron. These are known as

[1] Article I. was published in THE LANCET of July 13th, p. 102.

neuro-fibrils. They are to be found in organisms as low down in the scale as the leech and the earthworm, and they are met with in almost every variety of human neuron. That they subserve an important function is suggested by the fact that they increase in number and complexity of arrangement with every advance, philogenic and ontogenic, in evolution. (Figs. 18 and 19.) In the leech the fibrils are very fine and comparatively scanty; in the rabbit they are thicker and more numerous; in man they are still more numerous. Again, when a neuron (say the pyramidal "cell" of the human cortex cerebri) starts on its developmental career it is wholly devoid of neuro-fibrils. These appear first at the periphery of the neurosome, whence they spread towards the centre, ultimately forming a dense perinuclear and a looser peripheral network. In this process they multiply by longitudinal segmentation and by giving off lateral and terminal branches. The reticulum consists of thicker fibrils (forming a primary reticulum) which appear to come from the dendrites, and of finer fibrils forming a secondary reticulum. The perinuclear reticulum is closely associated with the nucleus, and it seems probable that in this way an anatomical connexion is established between the entire intra-neural fibrillary system and the nucleus. The latter exercises an intimate nutritional influence on the former.

There is no evidence of a fibrillary reticulum in the dendrites (unless perhaps in their large trunks), the dendri-fibrils coursing side by side without uniting. As they travel from the neurosome onwards some of them pass without division into the dendrite branches, but inasmuch as the sectional area of the dendritic tree steadily increases with its arborescence, they must eventually undergo considerable branching. Each ultimate dendrite contains a single fibril only, terminating in a free extremity. Apathy maintains that these terminal fibrils are continuous with an extra-neuronic fibrillary reticulum, but according to Cajal no such continuity exists—not even among the invertebrata.

Although no dendri-fibrils have been definitely traced into the spines and buds with which many dendrites are furnished, it may be that fibrils do actually pass into them, constituting so many *fibrilo-ceptors* (Fig. 10). In any case we may provisionally assume that both extremities and sides of the dendri-fibrils are furnished with such ceptors (dendri-ceptors). It will be observed that the dendri-fibrils constitute, like the dendrites themselves, an arborescence which, regarded as an inlet for nerve-impulses, may be represented as a funnel with its narrow opening pointing towards the neurosome. (Fig. 20.) As the dendri-fibrils pass into the neurosome they appear to mingle with its reticulum, and they are probably all closely connected with the nucleus. Although they sometimes appear to pass from dendrite to dendrite, their general trend is in the direction of the axon. Now if we assume that the dendrites are provided with fibrilo-ceptors we must also assume that the surface of the neurosome is similarly provided, seeing that axi-fibrils ramify about the neurosome as well as about the dendrites, and on this view we must suppose that fibrils pass from ceptors on the surface of the neurosome ("somato-ceptors," as we may term them) (Fig. 21) towards the axon. These, like the dendri-fibrils, are probably closely connected with the nucleus.

Fibrils can be seen converging towards the axon, in the neck of which they form a dense compact bundle. Here the slenderness of the axon is very striking, especially in the case of such a neuron as a Purkinje "cell," in which the ultimate dendri-fibrils (to say nothing of those which come from the surface of the neurosome) must be many scores of times more numerous than the axi-fibrils issuing from the neurosome. We may speak of these as *primitive axi-fibrils*. The neck of the axon represents the narrow portion of a funnel, of which the *wide* receptive opening corresponds to the dendri-ceptors and somato-ceptors. (Fig. 20.) The axi-fibrils run in parallel bundles without forming any reticulum, and just as the dendri-fibrils multiply with the branching out of the dendrites, so do the axi-fibrils multiply with the branching out of the axon, thus forming a funnel with its *narrow* receptive opening corresponding to the first branching of the axon. (Fig. 20.)

In the case of the axons of the motor and sensory nerves which supply non-nervous tissues, this process of division does not begin until towards their final distribution and is comparatively limited in extent, but in the case of those axons which ramify in the central nervous system about the dendrites and neurosomes of *other* neurons, the division is such that the total number of terminal axi-fibrils is much the same as that of terminal dendri-fibrils and somato-fibrils combined. In short, the wide mittor opening of the axonic funnel is on an average of exactly the same dimensions as funnel formed by the combined openings of the dendri-ceptors and somato-ceptors. The branching of the axi-fibrils takes place where the collaterals are given off, and, in the *area of distribution*, after the axons have lost their sheaths. This applies both to the axons of motor and sensory nerves and to those which ramify in the central nervous system.

It will be seen from the foregoing that each primitive neuro-fibril issuing from the neurosome may branch several times, and that thus impulses passing from it may reach various goals.

The function of the neuro-fibrils.—There is still much doubt concerning the function of the intra-neural fibrillary system. That the fibrils subserve some important purpose is suggested by the fact that they undergo a steady increase in number and complexity with the philogenic and ontogenic development of the neuron. It can hardly be doubted that a neuron presenting a highly developed fibrillary system is capable of functioning on a higher plane than one in which this system is either entirely absent or only rudimentary. The first view which naturally suggests itself as to the function of the neuro-fibrils is that they serve as so many intra-neural paths for the transmission of nerve-impulses, and whatever view be taken of their function in other parts of the neuron, it may be regarded as certain that the ultimate, naked dendri-fibrils and axi-fibrils do actually constitute paths for such transmission. Take the case of the sensory fibrils ramifying between the cells of the cornea. Any one of these is capable of conveying an impulse to the central nervous system and of setting up widespread central commotion. It is also equally certain that the fibrils forming the axonic ramifications within the central nervous system serve to convey impulses.

Admitting so much regarding the ultimate dendritic and axonic branchings, it may yet be urged that there is no proof that the fibrils within the dendrite trunks, the neurosome, and the sheathed axon, constitute individual nervous paths, as illustrated in Figs. 21 and 22. The events which succeed the division of a sensory or motor nerve-fibre strongly suggest that they do: after division remarkable changes occur in the central extremity of the divided fibre; the individual axi-fibrils separate, giving rise to a tasselled appearance, and thereupon the fibrils take on an independent growth, each fibril elongating and giving off branches, the ultimate divisions seeking out, as it were, and ultimately penetrating, an emptied neurolemmal sheath belonging to the peripheral portion of the divided nerve. Evidently the axi-fibrils are endowed with some degree of vital independence, a fact strongly confirmatory of the view that they constitute so many independent paths for the transmission of nerve-impulses.

Assuming that neuro-fibrils constitute the channels along which nerve-impulses travel we have next to inquire whether it is possible for impulses originating in different ceptors of the same neuron to pursue different intra-neural fibrillary routes, thus to produce end-effects which differ according to the route traversed; or whether, rather, an impulse once generated in a neuro-ceptor does not tend to become diffused throughout the entire fibrillary system of the neuron, so that the end-effect is the same no matter in what neuro-ceptor the impulse originates. These two theories may be spoken of as the theory of *intra-neural paths* and the *diffusion theory* respectively.

Let us put the first theory into a concrete form. Every sensory fibre (axon) distributed to the skin breaks up into separate fibrils. Now it is conceivable that some of the ultimate fibrils derived from the same axon are furnished with heat-ceptors, others with cold-ceptors, and others, again, with touch-ceptors; and it is further conceivable that an impulse started in any one of these three kinds of ceptors pursues within the same neuron an intra-neural route of its own, and is thus able to produce its own specific end-effect. Similarly in the case of impulses originating in the central nervous system, it is conceivable that each *primitive axi-fibril* as it issues from the neurosome may be dominated by a special group of ceptors, and may in its turn dominate

FIG. 19.

Neuron from the anterior corpora quadrigemina of cat (Cajal). Fibrils are seen passing from the neuron processes towards the nucleus and forming a peri-nuclear network.

FIG. 20.

Diagram showing the funnel-shaped entrance and outlet of the neuron.

FIG. 21.

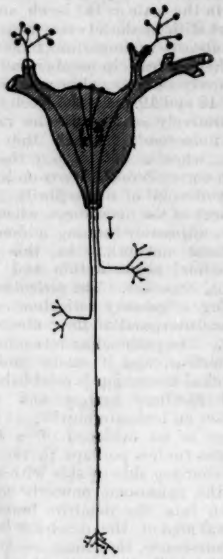
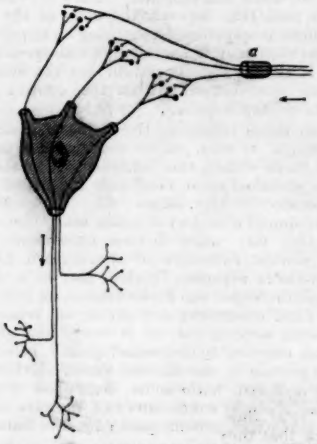


Diagram illustrating the theory of independent intra-neural strands.

FIG. 22.



The same. Three axi-fibrils are seen issuing from the axon *a*. Each of these breaks up into branches and by a number of mittors dominates a group of ceptors pertaining to a separate intra-neural route, and is thus capable of producing an end-effect of its own.

FIG. 23.

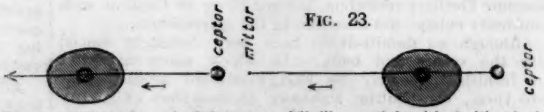


Diagram representing a single intra-neural fibrillary path furnished with a single ceptor and a single mittor, and forming a single synapse at each extremity.

FIG. 24.

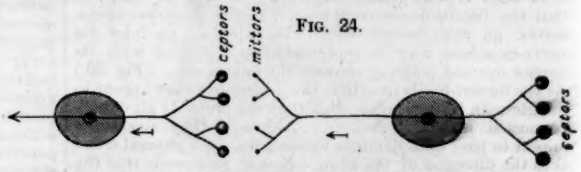


Diagram representing a single intra-neural fibrillary path provided with a plurality of ceptors and mittors.

FIG. 25.

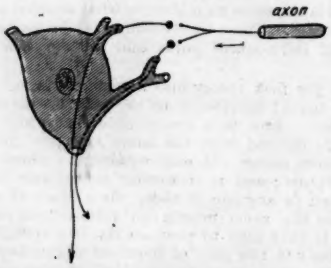


Diagram showing how an axi-fibril by its division might form synapic junctions with two separate intra-neural paths.

FIG. 26.

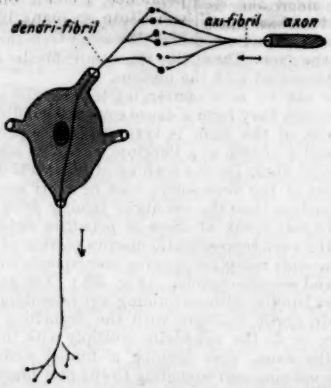


Diagram showing a plurality of synapses between two separate intra-neural fibrillary paths. The axi-fibril of the actuating neuron is represented as forming not a single synapse with the dendri-fibril of the actuated neuron, but several synapses. In either case the path traversed by the impulse in the actuated neuron would be the same. The essential effect of multiplying the synapse in such a case would be to multiply the structures (i.e., the ceptors) in which the impulse is generated.

a special group of the ceptors (Figs. 21 and 22) of another neuron. Against this view it may be advanced :—

(*a*) That neuro-fibrils not being insulated, an impulse originating in any one part of the neuron must perforce become diffused through its entirety, just as if this consisted of a homogeneous substance. In reply to this objection there is, in the first place, no evidence that the fibrils are not insulated ; nor, in the second place, are there any valid grounds for the widely held belief that nerve-impulses tend, like electricity, to become diffused, and that therefore neuro-fibrils require to be insulated.

(*b*) That although there does not appear to be any fibrillary reticulum within either the axon or the dendrites (unless perhaps in the main dendrite trunks), there is little doubt that such a reticulum exists within the neurosome, and thus an impulse striking this reticulum from any one dendrite would become diffused throughout it ; and if so, no matter from which dendrite the impulse were derived, the same end-effect would be produced in the mittors. In regard to this objection it has to be remembered that, inasmuch as more fibrils enter the neurosome from the dendrites than leave it by the axon, some union of dendri-fibrils must perforce take place within the neuron, and further, that a similar union of fibrils passing from the surface of the neurosome to the axon must occur within the neurosome. All this implies a considerable crossing of fibrils within the neurosome, and it does not seem improbable that such union and crossing of fibrils may help to give rise post mortem to the appearance of a reticulum ; it cannot in any case but render it difficult to follow fibrils pursuing an independent course through the neurosome. To me, at least, it appears very probable that each primitive axi-fibril is dominated by its own special group of ceptors (dendri-ceptors and somato-ceptors), and that whether this or that axi-fibril is innervated depends upon whether this or that group of ceptors is stimulated (Figs. 21 and 22).

(*c*) Thirdly, that it is difficult to see what purpose separate intra-neural routes can serve in the case of efferent axons passing to muscle-cells and gland-cells. The existence of such paths in sensory cutaneous axons might conceivably be of service in enabling impulses originating in different kinds of ceptors to pass along particular intra-neural paths, and thus to produce different end-effects, but in the case of the motor nerve-fibres, e.g., it is not easy to see what would be their use, since, as far as we know, the sole object of motor nerve impulses is to bring about muscular contraction, and for this purpose a single path might be expected to suffice. In answer to this objection it may be suggested (*a*) that the intensity of the stimulus conveyed by a motor-axon depends upon the number of axi-fibrils innervated, rising and falling according as the number innervated increases or diminishes ; and (*b*) that some of the fibrils within the motor-axon subserve other purposes than the conduction of motor impulses —e.g., impulses influencing the production of heat within the muscle substance.

A fact of great significance in connexion with the question of intra-neural paths is the multiplicity of synaptic junctions between neurons entering into functional relation with one another : when one neuron enters into functional relation with another neuron it is not by means of one synapse only, not by the action of a single mittor upon a single ceptor (Fig. 23), but of many mittors upon many ceptors (Fig. 24). What is the meaning of this? It is obvious that when one neuron is actuated by two or more other neurons it must be actuated by more than one mittor and provided with more than one ceptor, but why in the case of any two neurons entering into functional relation should there be more than a single synapse between them? How are we to interpret the fact that the synaptic junctions between two neurons are sometimes to be reckoned by the hundred? Here, I say, is a fact of great significance, and one, if I mistake not, which strongly supports the theory of independent intra-neural paths. On the theory of diffusion the actuation of a single ceptor would cause an impulse to be diffused throughout the entire neuron actuated, and in such a case the only object I can see in having more than one synapse between two neurons would be to increase the total capacity for generating impulses—for the greater the number of ceptors the greater must be the capacity for generating impulses. But while on the theory of diffusion a single synapse between two functionally related neurons might conceivably suffice, it is obvious that, on the theory of separate intra-neural paths, there must be at least as many synapses between the two as there are separate paths.

While the theory of separate intra-neural paths helps to explain the multiplicity of synaptic junctions between any two neurons, it does not wholly explain the extent of that multiplicity. This the following considerations will show. We may assume that the number of separate intra-neural paths in a given neuron is represented by the number of its primitive axi-fibrils—i.e., fibrils passing from the neurosome into the axon. It cannot, at any rate, be more than this. A little thought will show that, on an average, the number of primitive axi-fibrils in a neuron must be the same as the number of kindred fibrils passing from another neuron (or other neurons) to actuate its ceptors. Hence, if the axi-fibrils suffered no division (Fig. 23), the synapses about the dendrites and the body of a neuron would, on an average, be equal in number to its primitive axi-fibrils. But we know that the latter undergo considerable division (Figs. 22, 24, and 26), forming 10, 20, or even more branches before they form synapses, and that consequently the neuro-ceptors of a neuron are greatly in excess of its primitive axi-fibrils.

What is the object of this branching? Why should not a single synapse suffice for each *primitive axi-fibril*—each separate intra-neural path? I can conceive of two reasons for this. We may suppose (*a*) that one primitive axi-fibril is thereby able to actuate more than a single intra-neural route (Fig. 25), or (*b*) that one primitive axi-fibril is by means of a group of mittors brought into relation with a group of ceptors belonging to a single primitive axi-fibril (Figs. 22, 24, and 26). The only apparent advantage in such a case is the multiplication of generating stations. We can conceive that it is physiologically easier to increase the total amount of nerve-impulse generated by multiplying the number of generating stations (ceptors) than by increasing the size of a single ceptor, and that the quantity of impulse generated by a neuron is in proportion to the number of ceptors stimulated is certain. When, e.g., in a given small area of skin, a few heat-spots are stimulated, the sensation of heat resulting is less intense than when a large number are stimulated. Now we may fairly postulate several heat-spots to a single peripheral sensory neuron, so that by increasing the number of heat-spots stimulated in a given small area we do not increase in anything like the same degree the number of neurons stimulated. I, indeed, believe it would be possible greatly to increase the number of heat-spots stimulated (and thus the intensity of heat felt) without increasing the number of individual neurons stimulated. The augmentation of sensation in such a case would be due to the augmentation of the ceptors stimulated per each individual neuron.

It has occurred to me that some light might be thrown on the question of the existence of separate intra-neural paths by ascertaining whether, on the assumption that a single sensory axon to the skin has only one intra-axonic path, the skin is provided with a sufficient number of neurons for its sensory requirements. The answer appears to be in the affirmative.

Let us assume, as with a fair degree of accuracy we may, that 1,000,000 sensory fibres are distributed to each half of the body, and that 1/10th of these (= 100,000) go to the skin. Then estimating the cutaneous area of one half of the body at one square metre—i.e., 10,000 square centimetres—

$$\frac{100,000}{10,000} = 10$$

fibres (axons) would be distributed to each square centimetre. It must, I think, be admitted that on the above assumption this number would appear to be sufficient for the sensory requirements of the skin. But, on the other hand, a neuron furnished with many fibrillary paths, each capable of producing its own end-effect, seems better fitted to fulfil the complex functions demanded by coördination and, still more, mentation, than one in which impulses are, as is assumed, diffused indifferently throughout its entire extent. Further, the postulation of such paths enables us to conceive of a mechanism by which nervous acquisitions are made, since there is definite evidence that neuro-fibrils are capable of growing and multiplying. The balance of argument, therefore, will be seen on the whole to be in favour of the theory of intra-neural paths.

(To be continued.)

IMPERIAL CANCER RESEARCH FUND.

THE Duke of Bedford presided at the tenth annual meeting of the General Committee of this Fund, which was held at the Royal College of Surgeons of England on Thursday, July 18th.

The report was introduced by Sir WILLIAM CHURCH, chairman of the Executive Committee, who brought briefly to the notice of the meeting the main points in the fourth and fifth scientific reports.

The report of the acting honorary treasurer, Sir William Church, showed a normal rate of expenditure, only interfered with by the publication of the two scientific reports mentioned above, though the expenditure, £5988, exceeded the income by £76. It has been agreed to purchase with the capital sum of £5000 the rent-free occupation of newly erected and fully equipped laboratories in the new Examination Hall of the Royal Colleges now erected in Queen-square, W.C.

REPORT OF THE GENERAL SUPERINTENDENT.

The preparation for publication of the Fourth Scientific Report absorbed much of the attention of the scientific staff up to the end of November, when it was issued. From that time up to the present, the internal arrangement and equipment of the new laboratories have made very considerable demands upon the scientific staff and have required that the work in the old laboratories should be confined for the most part to maintaining the necessary routine work and to such investigations as needed repetition or supplementing during the preparation of the Fifth Scientific Report which is now ready to be issued.

The statistical investigations have been continued in outlying parts of the Empire and in India, where from December, 1907, to December, 1911, 2014 fresh cases were reported, 463 being in vegetarian castes, 1014 in those living on a mixed diet, while in 477 specific reference to diet was not made.

The breeding experiments bearing upon heredity have been continued.

From January, 1912, preparations were made in anticipation of the removal from the old to the new laboratories and no fresh research was undertaken. These precautions enabled the move to be carried out expeditiously during the last week of May.

The investigations reported in the Fourth Scientific Report dealt solely with the nature of cancer, and experimental evidence was adduced in explanation of the association of some forms of cancer with very varied kinds of chronic irritation. The Fifth Scientific Report is concerned with the nature of the resistance which may be artificially produced to the inoculation of cancer and the bearing of the results on the biology of the tumour cell. It contains four papers by Dr. Russell, Dr. Woglom, Professor Higuchi, and Dr. Da Fano, of which the first three are new contributions to knowledge, whereas the fourth is a somewhat abridged translation of a paper which has already appeared in German.

The correct interpretation of the artificial resistance which can be produced is a most important subject bearing on the biology of the tumour cell, and is necessary as a guide for fresh investigations, whether ultimately it will be proved to have a direct bearing upon the treatment of cancer or not. The following aspects of the question are still under discussion: 1. Whether immunity or resistance can be produced only (*a*) by tumour tissue or (*b*) the normal tissue of animals of the same species, or (*c*) by both tumours and normal tissue from other species as well. 2. Whether there are two types of immunity to be considered, an active immunity, in the production of which the whole organism reacts, or a second type in which a tumour already existing withdraws some specific foodstuff to such an extent that other growths are starved. 3. Whether the immunity produced by normal tissue is identical in nature with that produced by tumour.

The papers published in the Fifth Scientific Report are additional evidence that tumour or normal tissue produces immunity only when it is derived from the same species of animal as that on which the test is made, and that the immunity produced by these substances is of the same nature. They demonstrate, furthermore, that starvation immunity does not exist, and that all the observations so far made can be adequately explained by assuming the presence of an active immunity, in consequence of which the tumour cells are paralysed and rendered unable to obtain from the host the specific scaffolding of connective tissue and blood-vessels necessary for their development. It is shown also that during the development of resistance a reaction is in progress throughout all the connective tissues of the animal, although it is not possible to be sure of its mechanism.

The tumours vary among themselves in two remarkable ways: (*a*) as regards their power to induce immunity (auto-immunity) in other animals; and (*b*) in their susceptibility to such immunity. These two factors play the predominating rôle in the spontaneous cure of transplanted cancer, and when healing does occur it is determined mainly by properties in the tumour cells themselves, by virtue of which they can excite reactions in their new environment inimical to further tumour growth.

The spontaneous recession of transplanted tumours was first observed in the mouse, and it is now well known that it occurs in the rat; during the past year it has also been frequently observed in the case of a tumour of the rabbit which is being propagated in this laboratory. There can, therefore, be no doubt that it is a phenomenon of wide biological significance. Recession takes place in spontaneous tumours, however, with much greater rarity, and observations extending throughout the past eight years have shown that in the mouse, among tumours whose malignancy has been demonstrated both clinically and microscopically, it occurs in scarcely 1 per cent. Resemblances can be recognised when the appearances seen during the process in spontaneous tumours are compared with those in propagable growths, and in both instances they suggest that its course is due to a disturbance in the relationship between epithelium and connective tissue, in the course of which the cancer cell, losing its aggressive character, is overpowered by the connective tissue.

The study of healing in spontaneous and in transplanted tumours shows that the cure for cancer must be sought by obtaining a fuller knowledge of those properties of the malignant cell which render it susceptible to inimical influences and not merely by striving to induce these influences in its environment.

The number of spontaneous cures occurring in a transplanted strain is determined by several factors of which some are resident in the tumour cells themselves. One of them is a change taking place in the cells themselves whereby they become more vulnerable to connective tissue invasion and overgrowth which put an end to their existence. This change, or its equivalent, cannot yet be induced experimentally, but so far as the process of healing has been followed, *e.g.*, after the use of radium or adrenalin, no difference has been detected between it and spontaneous cure. In the case of transplanted tumours, the ultimate result is merely an enhanced frequency of auto-immunisation due to the absorption of the tumours in the treated as compared with the control animals. Interference with continuous growth has been obtained only inconstantly and in very moderate degree for tumours naturally exhibiting a tendency to spontaneous healing, and not at all as yet for those reproducing more faithfully the features of natural cancer in their powers of progressive growth and their tendency to produce metastases in the animals inoculated. The differences between the tumour strains at either extreme are, however, differences in degree only, not in kind. From the small beginning with tumours easy of attack and at the bottom of the ladder, as it were, it is to be hoped that advance will be made, stage by stage, till the cells at the top of the ladder—those of the most virulent transplantable tumours and of spontaneous growths—may be rendered susceptible to changes in their environment and liable to extinction through the agency of these changes, even though they cannot be made to succumb to direct attack alone.

In this conclusion general agreement appears to have been reached in different parts of the world, and in Germany and France efforts have already been made to obtain an elective action upon the tumour cells in a variety of ways by direct bio-chemical attack. This is a line of investigation which at present urgently requires further following up.

A fresh line of research has been opened up by the observation of certain tumour strains of a very special character, which store up carbohydrates in a form recognisable microscopically as glycogen, and it is hoped that bio-chemical investigation combined with microscopical examination will throw some light upon the manner in which the tumour cells utilise food substances for their own purposes.

As ample opportunity was given for designing and arranging the new laboratories, they are more commodious and better adapted to their purpose than the old, a special feature being that suitable provision is made for bio-chemical investigations, which, as already indicated, urgently require development.

A vacancy on the scientific staff has arisen through the appointment of Dr. Woglom to the post of First Assistant to the Crocker Cancer Research Fund, New York, in which position his colleagues and myself wish him all success.

It is not possible to conclude this annual report without referring to the services which the late Sir Henry Butlin rendered to the investigations conducted in the laboratories by the scientific staff. These services were so extensive, so valuable and so willingly rendered as an active collaborator that it is well they should be placed on record.

In 1903 it became apparent that valuable as were the specimens accompanying reports of cases of cancer occurring at home and in outlying parts of the Empire, they were for the most part of little value beyond the light they threw upon the clinical diagnoses forwarded with them. Therefore, it was decided to keep in touch with clinical and pathological studies in the human subject in a manner likely to promote knowledge of the disease. On consideration of what particular form of cancer should be so studied and what part of the body selected the tongue was chosen. This decision was arrived at for several reasons. When anything is wrong with the tongue it speedily attracts the attention of the patient, and it is a part of body which is liable to suffer from different forms of chronic irritation and inflammation often associated with cancer. It is accessible to complete examination and early diagnosis. The surface epithelium of the tongue is devoid, for the most part, of other disturbing epithelial structures such as glands, and hair is entirely absent. When cancer makes its appearance in the tongue it progresses rapidly, and dissemination occurs in the neighbouring glands. For these reasons it was thought to be the most suitable object to study alongside of experimental investigations in animals which had shown that all the features of natural cancer could be reproduced by the inoculation of a minute fragment of tumour tissue into a healthy animal. Therefore, a number of surgeons were written to in 1903, and among them the late Sir Henry Butlin, who had long held the foremost position as an authority on cancer of the tongue, and who at once fell in with the proposed plan of investigation. During the succeeding years up to 1908, he himself operated on and preserved, according to instructions, immediately after removal with all the care necessary for the most accurate and elaborate microscopical examination, the diseased areas from 44 cases in which operation upon the tongue was deemed advisable, either because cancer was already present or a pre-cancerous condition suspected. Through Sir Henry Butlin's instrumentality another 12 cases were obtained during 1909–10–11 from other surgeons at his instigation and under his own supervision, at the time when he himself had ceased to operate. Each of these 56 specimens removed from the tongue was examined microscopically in consecutive series of sections from one end of the diseased area to the other, with the result that cancer was recognised in chronically irritated areas on the surface of the tongue in earlier stages than had previously been possible. What had formerly been regarded as pre-cancerous conditions were shown to be actually cancer, and were, in fact, miniature pictures of the more fully developed disease. The surgical bearings of this investigation Sir Henry Butlin has himself described in a number of papers from the spring of 1906 onwards, and their importance, not only for the treatment of cancer of the tongue but for all cancerous conditions, need not be emphasised here.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

THE seventy-first annual meeting of this association was held on July 11th and 12th at the Guildhall, Gloucester, under the presidency of Dr. JAMES GREIG SOUTAR.

Opening of Meeting.

The morning of the first day was occupied with the business of the association, and in the afternoon Dr. Hubert Bond, Commissioner in Lunacy, was presented with an illuminated testimonial from the members expressing great admiration for his work as honorary general secretary of the association for seven years, during which time there had been a great accession of new members.

The thanks to the outgoing President, Dr. William R. Dawson (Dublin), were very cordial, and were proposed and seconded respectively by Dr. T. W. MCDOWALL and Dr. R. PERCY SMITH, the latter remarking that the association was very fortunate in having had two Commissioners in Lunacy as presidents in succeeding years.

Dr. DAWSON, in acknowledging, said he was proud to have been president in a year which had seen the initiation of a movement to provide clinics in psychiatry and improve the conditions of service of asylum medical officers in the kingdom. He then gracefully inducted his successor into the chair.

Presidential Address.

Dr. SOUTAR then proceeded to deliver his address. His first words were those of welcome to Gloucestershire and to its city, which was one of pilgrimages. Seventy-one years ago six men met in Gloucestershire and laid the foundation of the present association. He said he could not, in this address, bring to the association fresh tidings from the laboratory, illuminating generalisations from the wards, nor any new theory to replace the old which had had holes knocked in it by collision with rugged facts. He had not even new views on classification, and would only say that the more detailed it became the greater seemed to be the practical difficulty in pigeon-holing cases. He proposed, therefore, to confine his remarks to two drifts of opinion which seemed to be at present circling among psychiatrists. The first was that their continental brethren were outstripping Britons in the study of the specialty. But he thought the validity of that statement might well be examined. He quoted from Sir Thomas Clouston's "The Hygiene of Mind," and after setting forth the vast range of subjects which required to be studied he again asked the author's query, "Who is sufficient for these things?" The answer was: No person, no people, no period. He believed that when the reckoning was made there would be found, among valued and welcomed contributions in foreign coin, bits of British gold, bearing dates of our own times, of days gone by, and of others yet to come. He recommended the perusal of the historical part of Clouston's article, "The Diploma in Psychiatry," in the *Journal of Mental Science* for April, 1911. Among the members of the society were a large number who were interrogating the function of every organ of the body, stimulated thereto by the suggestion that in many cases the wreck of mind was but a manifestation of antecedent faults in metabolism which might be found to be remediable or avoidable. But it was not justifiable to go to the State and ask for money to gratify the insatiable inquisitiveness of the scientific mind. Such a request would be met by the scientific inquiry, not What are your theories, your hypotheses, your speculations, your hopes; but, Upon what already ascertained facts do you base them? If it could be shown that what had been done was justified by its practical utility, that the laboratory and the clinic had furnished knowledge which made for the mental health of the people, then their case was won, and they would have ranged on their side the humanitarian instinct. But had the stage been reached in psychiatry when that could be promised? Were we not rather inspired by hopes than supported by assurances which could be formulated and submitted in a convincing way? He said that the fact that we did not possess the highly-equipped State clinics and research laboratories which were to be found elsewhere must not be taken as indicating want of sympathy with research, or as failure to promote treatment, but rather that it had not yet been shown that the benefits from them were commensurate with the financial burden entailed. His remaining words concerned the Diploma in Psychiatry. It was altogether good that further opportunities should be afforded for study under competent teachers, but it was not possible to include all the subjects which bore on the marring of the mind, and so a selection had to be made for the purposes of this diploma. He thought the idea should not be entertained that these were the only lines which led to effective work in this special line, and he reminded those present of the practical-minded general practitioner who, while laying no claim to the title of specialist, was eager and ready to apply the knowledge given to him. He deprecated the diploma being regarded as essential to candidates for the higher appointments, or to those who aspired to consulting practice. The diploma could at most be but a sign of a varying degree of acquirement within a narrow range of that wide field of knowledge which was applicable in their work, and it ought not to be considered as the sole passport to success.

On the proposition of Sir GEORGE SAVAGE, seconded by Dr. SIDNEY COUPLAND, the President was heartily thanked for his address.

Mr. J. F. BRISCOE read a paper entitled

"*Appendicitis in Asylums.*"

The contribution was an attempt to establish the fact that appendicitis was preventable as shown by its very rare occurrence in county and county borough asylums, asylums for idiots, hospitals, and licensed houses in England and Wales. In the ten years 1902-11 there were recorded 75 deaths from appendicitis in these institutions, ascertained for the most part by post-mortem examinations, but it was not known how many had this disease before entering the asylums. It seemed to the speaker that the exciting cause of appendicitis was the result of intestinal stasis; but this was obviated by the routine dieting and intestinal drilling by purgation which obtained in these institutions. Great care was taken in asylums to have the food given to suit the special case, and where necessary macerated. He proceeded to advocate intestinal drill in schools *pari passu* with tooth-brush drill.

Sir GEORGE SAVAGE confirmed the view that appendicitis was very uncommon in asylums, and said that during his 17 years at Bethlem Asylum he saw only one case, and that was in a house physician.

The discussion was continued by Mr. BUCKELL, Dr. PERCY SMITH, Dr. D. BLAIR, Mr. WALLACE, Dr. HOWELL, and Dr. W. F. MENZIES, and Mr. BRISCOE replied.

Dr. D. MCKINLAY REID read an exhaustive paper on

Bacteriology of Over Forty Cases of Diarrhœa, with Special Reference to Asylum Dysentery.

He divided his cases clinically into four groups: (1) acute dysentery; (2) chronic dysentery; (3) severe diarrhœa; and (4) slight diarrhœa. He reported that from the fæces of the patients who were suffering from acute dysentery one or other of two atypical strains of the Flexner bacillus had been isolated on 16 occasions. He detailed the organisms found in the remaining cases, and compared the cultures made from stools with those obtained from organs in fatal cases. He also gave the control results and the agglutination tests with patients' sera and rabbit Flexner immune serum. He referred to the toxicity of cultures in guinea-pigs and reviewed the literature on the bacteriology of dysentery.

The paper was discussed by Dr. MENZIES, Dr. G. S. POPE, and Dr. E. GOODALL, and Dr. REID replied.

In the evening the annual dinner of the association was held at the Guildhall, when the High Sheriff of Gloucestershire and the Deputy-Mayor of Gloucester were present.

The sitting on Friday was devoted to a discussion on

The Mental Deficiency Bill.

Dr. T. B. HYSLOP, in introducing the discussion, said that legislation was urgently needed for 66,509 of the 149,628 mentally defective persons in England and Wales alone. In Scotland 34·57 per cent. of the defective were estimated as urgently in need of provision, while in Ireland the corresponding figure was 66·06 per cent. The Royal College of Physicians' definition of the feeble-minded was "persons who are capable of earning a living under favourable circumstances, but are incapable, from mental defect

existing from birth or from an early age, (*a*) of competing on equal terms with their normal fellows, or (*b*) of managing themselves and their affairs with ordinary prudence." But this he thought hardly sufficient to form a basis for legislation, and it was also apt to cause many misgivings and apprehensions in the public mind, inasmuch as it might include many who might with justice be excluded from the provisions of any Bill involving any deprivation of liberty of the subject. In the history of every prophylactic measure adopted for the benefit of the greatest number, there had, he said, ever been much opposition and delay owing to fetish worship of the liberty of the subject. He regarded as one of the most important parts of the Bill that dealing with the matter of preventing procreation by the mentally defective. Those who concerned themselves with the problem of degeneration knew that much of the defective mindedness so prevalent might in the future be obviated. In discussing the marriage laws he expressed the opinion that just as the habitual drunkard was deprived of his liberty so the existence of the alcoholic habit should be a bar to matrimony. Temporary and developmental attacks of mental deficiency were still inadequately provided for, and it was necessary to fall back upon the provisions of the Lunacy and Idiots Acts. Dr. Hyslop then proceeded to discuss the question whether the Bill was sufficient protection for existing institutions for idiots and imbeciles, and for other institutions in which defectives were at present treated. He considered that the liberty of the subject would be as efficiently safeguarded under this Bill as it now was under the provisions of the Lunacy Acts and the Idiots Act, and concluded by a detailed reference to administration and economy.

Dr. DAWSON brought the lengthy discussion to a head by proposing—

> That we, the Medico-Psychological Association of Great Britain and Ireland, cordially endorse the action of our Irish division in endeavouring to have the provisions of the Mental Deficiency Bill extended to Ireland, and we would urge upon the Government the modifications necessary for that purpose.

He pointed out the great need there was for such provision in Ireland, for in that country there was only one institution for imbeciles and idiots, and that was a voluntary one, able to take only about 100 patients.

This was seconded by Dr. T. DRAPES, and carried unanimously.

Dr. J. MIDDLEMASS proposed, and Dr. D. MACRAE seconded, the following motion, which was carried unanimously,

> That a deputation, to be chosen by the President, Past President, and President-elect, be appointed to wait on the Home Secretary and any other Government official whom it is thought desirable to interview, to lay before them the views of the Association, so far as they have been expressed, respecting the Mental Deficiency Bill.

The social arrangements made by the local members included a pastoral play, "The Fantastics," at Barnwood House.

REPORT OF H.M. CHIEF INSPECTOR OF FACTORIES FOR 1911.

Sir Arthur Whitelegge, K.C.B., has recently issued his report on the work of the Factory Department of the Home Office for the year 1911, and the volume abounds with information alike instructive to the manufacturers of the country and indispensable for the guidance of the State department by whose authority it has been produced. The work, which is issued in Blue-book form, runs to 335 folio pages, and treats of a variety of subjects, every one of which is of great economic importance.

Summary of Contents.

Of the entire volume only about a dozen pages are devoted to the chief inspector's introductory address—the information it contains, relating as it does to legislative and other matters of State concern, being obviously intended for the guidance of the Home Secretary and his colleagues. The remainder of the volume is assigned to the sectional reports—namely, those of the medical inspector, the principal lady inspector, the six divisional inspectors, and the special inspectors of dangerous trades, and of electrical factories respectively. In the aggregate these reports occupy at least 300 pages of closely printed matter. As far as practicable they are arranged on a uniform plan, the topics dealt with by the reporters severally being grouped under determinate headings, so that the information contained in each report can readily be referred to and analysed. It is this orderly classification of material contributed by various independent workers which constitutes a special merit in the reports issued by Sir Arthur Whitelegge, and which differentiates the publications of his office from much Blue-book literature published by some other departments.

In the present volume each of the divisional reports contains separate sections dealing systematically with the subjects of sanitation, injuries to workmen, dangerous trades, industrial poisoning, and conditions of employment; and the inquirer will find, in a useful table of contents appended to each section, the means of ascertaining how far the provisions of the Factory Acts are complied with in the several divisions of the kingdom.

Sanitation of Bakehouses.

Under the general head of "sanitation" important and varied information is conveyed by the reporters in each of the six divisional areas. Take, for example, the manufacture of food. One of the metropolitan inspectors refers to the objectionable practice among bakers of smoking whilst at work; no attempt being made in these cases to prevent ash, cigarette ends, &c., from falling into the dough, or into the troughs or the mixing tins. The inspector of the South-Western Division gives details of exceptionally filthy conditions detected in certain bakehouses. In one instance the bakehouse wall formed one of the partitions of a series of three sanitary conveniences at the rear, from which liquid percolated through the division wall. This reporter observes that some bakers appear to regard as a necessary evil filth-caked floors, littered with eggshells, paper, grease, and other refuse. In the North-Eastern Division the inspector reports on the general laxity prevailing as to the cleanliness of the bakehouse benches, floors, and utensils. He remarks on the want of personal cleanliness of some of the men employed; and justly condemns the habit of smoking, chewing, and spitting on the bakehouse floors. One of the inspectors of the Northern Division emphasises the need for greater personal cleanliness among workers—expectoration on the bakehouse floors being lamentably common. Another inspector mentions the surprising fact that the primitive method of kneading dough with the bare feet still obtains in some of the bakehouses of his district!

On the other hand, several of the inspectors report improved conditions of cleanliness in the bakehouses of their districts, as the result of the action of the local sanitary authorities. In one metropolitan district mention is made of a bakehouse in which the food passes from flour in the sacks to loaves in the cart without ever being touched by the hands. In this establishment baths are provided for the workers.

Lead Poisoning.

The report of Dr. Thomas M. Legge, H.M. Medical Inspector of Factories, contains several matters of exceptional interest to our profession. Among items of sanitary importance we notice considerable modifications in the special rules for the conduct of dangerous trades—a subject to which much attention has been directed in recent years. The regulations for the smelting of lead materials have been strengthened so as to provide more effectually for the removal of dangerous fumes and dust; for the periodical medical examination of workers in lead-smelting industries; for the exclusion of females at all ages, and of boys below a specified age, from employment in lead processes; for the restriction of hours of work; and for the provision of meal-room, lavatory, and bath accommodation. A considerable increase is recorded in the observed numbers of cases of lead poisoning. This, in Dr. Legge's opinion, is attributable partly to the increased employment which this industry shared with other industries in 1911, and partly to the heat of last summer which increased the amount of dust inhaled by the workers, and caused much derangement of the digestive tract, with consequent increased tendency to absorption of lead.

In this report will be found an interesting account of the Institut für Gewerbe Hygiene at Frankfort, and of the system of examination of the blood in cases of suspected plumbism, which has been worked out mainly in connexion with the printing trade at Leipsic,

and is now being tried in the Potteries of North Staffordshire. At the Institute for Hygiene of the University of Leipsic the practice obtains of basing the diagnosis of plumbism on the presence of basophilia in the red blood corpuscles. There is no doubt as to the presence of these altered red blood cells in many cases of lead poisoning, but in England and in other countries the importance attached to their discovery is less than in Leipsic. They are generally believed to indicate a regenerative process—i.e., an over-production of red blood cells from the bone marrow, &c.—and their discharge into the blood stream before full development. For some years Dr. Legge has regarded existing evidence as strongly in favour of the utmost possible use of this method. The absence of any standard had always been his difficulty. But in Leipsic a standard has now been adopted—namely, that if more than 100 basophile granular red blood cells per million are found, the case is to be regarded as very suspicious of lead poisoning. It is this standard which Dr. Legge regards as rendering the method practicable, and he thinks its adoption to be worth further trial.

This section of the report contains particulars of the incidence of diseases among persons engaged in the various lead processes. From these it appears that operations involving contact with molten metal are more likely than is actual handling to cause lead poisoning.

Referring to thefact frequently mentioned in THE LANCET that printers suffer inordinately from tuberculous phthisis, Dr. Legge holds that their excessive mortality is due mainly to vitiation of the atmosphere from reluctance to admit fresh air on account of the extreme sensitiveness of these workers to draughts.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

MEETING OF COUNCIL.

A QUARTERLY meeting of the Council was held on July 11th, Sir RICKMAN GODLEE, the President, being in the chair.

The PRESIDENT reported the result of the election of four members of Council, as recorded in THE LANCET of last week, and he stated that the fourth successful candidate, Sir Berkeley Moynihan, would be substitute member for the late Sir Henry Butlin, and that therefore his term of office would come to an end in 1919. Sir Frederick Eve, Sir Anthony Bowlby, Mr. D'Arcy Power, and Sir Berkeley Moynihan were then introduced, made declarations in the terms of the Oath prescribed by the Charter of 1800, and took their seats as members of Council.

The congratulations of the Council were given to the President on his receiving the honour of a baronetcy, and to Sir John Bland-Sutton and to Sir Berkeley Moynihan on receiving the honour of knighthood.

The best thanks of the Council were given to the executors of the late Lord Lister for presenting to the College a collection of some of his surgical instruments.

A letter was read from Sir Henry Morris reporting the proceedings of the General Medical Council at its late session, and the best thanks of the Council were given to him for acting as the representative of the College.

A letter was read from Dr. T. W. Shore, Dean of the Medical School of St. Bartholomew's Hospital, calling attention to the difficulties experienced in the teaching of anatomy and operative surgery owing to the inadequate supply of "subjects," enclosing a copy of memorandum on the question presented by his school to the Royal Commission on University Education in London, and expressing the hope that the Council of the Royal College of Surgeons of England would see fit to coöperate in endeavouring to obtain a satisfactory supply by approaching the Government with a view to legislation or otherwise. The letter was referred to the committee already considering the matter.

Mr. R. Clement Lucas was reappointed the representative of the College on the Court of Governors of the University of Sheffield for the next three years.

A letter was read from the president of the Committee of Organisation of the Ninth International Otological Congress to be held in August, 1912, in the buildings of the Medical Department of the Harvard University, inviting the College to send a representative. Mr. C. A. Ballance, M.V.O., was appointed.

Sir Rickman Godlee was unanimously re-elected President, and Mr. C. T. Dent and Mr. G. H. Makins were appointed Vice-Presidents.

The following lecturers were appointed:—Hunterian Professors: Arthur Keith (six lectures), Wilfred Batten Lewis Trotter (two lectures), William Wright (two lectures), Joseph Ebenezer Adams (one lecture), and Kenneth Macfarlane Walker (one lecture); Arris and Gale Lecturers: William Blair Bell (two lectures), and Charles Gabriel Seligmann (one lecture); Erasmus Wilson Lecturer: Samuel George Shattock; Arnott Demonstrator: Arthur Keith.

Public Health.

CITY OF BIRMINGHAM REPORT ON INFANT MORTALITY.

THE Birmingham corporation has dealt with the subject of infant mortality by appointing a lady medical officer, Dr. Jessie Duncan, and two lady health visitors to pay special attention to a squalid area comprising St. Stephen's and St. George's wards. It is stated that the material which these ladies have to deal with is about as bad as it can be, ignorance, poverty, and carelessness being everywhere in evidence. The mothers of more than half the infants are employed in factories.

The results of this special attention and an expenditure of about £500 a year are very encouraging. The infant mortality-rate has been lowered, and the medical officer of health is anxious to extend the experiment to other districts. The plan adopted is to obtain early information regarding birth by means of the Notification of Births Act, and for health visitors to visit every baby every week for the first five weeks and every month afterwards until the end of the first year. At these visits advice on breast-feeding and methods and times of feeding is given. If the child is ailing or unsuitably fed the case is reported to the lady medical officer, and then, if necessary, Dr. Duncan visits and takes the case over. Infant consultations are held twice weekly in the district, to which the mothers are invited, but the careless women and the mothers of ailing children are specially urged to attend. During 1911 there were 2292 attendances at these consultations. In addition to this work the health visitors often hold "meetings" of mothers in the courts and yards and give information and explain instructions.

This work has enabled some interesting statistics to be compiled. There is a table comparing the mortality of the children of women who go out to work with that of those who stay at home, from which it appears that the mortality amongst the children of working mothers is less than that of the women who stay at home. Dr. Duncan attributes this to the fact that it is the woman who is energetic and thrifty who wishes to supplement her husband's earnings by going to work, additional money having an important influence on poverty, which is one of the greatest causes of infantile mortality. "For often (except, of course in the better-class houses) the mother who stays at home is improvident and lazy, neither keeping her home in a comfortable condition nor attending properly to the wants of the children. The woman who lives in furnished apartments, of which there are many in this district, and moves from one house to another, never goes to work, even when in extreme poverty." On the other hand, it is shown that the women who were not in industrial employment had a somewhat larger percentage of children in good health at the age of 12 months than those who went out to work. It is suggested that the greater number of these women may have been able to suckle their children. It is noted that the women who were not employed had somewhat larger families than those who worked in a factory, and that the women who carried on work at home or went out charing had the largest families of all.

The table of mortality of children according to mothers' ages shows that the children of younger women have a larger mortality than those of older women above 25 years of age. It is suggested that the younger are more ignorant and more likely to rely on the advice of the grandmother or neighbours.

But most instructive are the tables showing the relation between infantile mortality and the wages of the father. In 1910 the total infantile mortality in families where the father was out of work or earning less than £1 a week

was 196; where the father was earning more it was only 127. Further comparisons were made in order to discover whether breast-feeding *per se* is sufficient to counteract the bad influences exerted by extreme poverty. The infantile mortality of breast-fed babies in families under the £1 a week line was 112, over the £1 a week line 69. The rate among those fed partly or entirely by hand below the £1 a week line was 194, and above this line 125. And while this points to the fact of breast-fed babies having a better chance of living than those fed by hand, breast-feeding alone is unable to counteract the influences associated with great poverty. "Thus, the breast-fed infants in poor houses die at the rate of 112 per 1000, against only 69 per 1000 in better-class houses, the excess is 62 per cent., partly due to poverty." "The difference among the hand-fed babies is only 55 per cent., so that the excess of mortality occasioned by poverty was even greater among the breast-fed than among the hand-fed."

Another table giving the comparison of the health of the survivors at 12 months divided according to the wages of fathers is very interesting. At the end of 12 months 72 per cent. of children were in good health where the fathers' wages were over £1 per week, and only 51 per cent. where the earnings were less than this. Where the mother was not employed the percentage of children in good health was slightly higher both in the poor and in the better-class homes.

Other tables compare infant mortality and rental of houses, give figures of how babies were fed and mothers employed, and compare infant mortality in families under and over the £1 a week line, both breast-fed and hand-fed, for the first six months of life.

The net result of the figures is to show that while breast milk is undoubtedly the best food for children (in the district considered) a very important factor to be taken into consideration is the condition of the home.

During the year an investigation was carried out on the quality of breast-milk in women below the poverty line. 136 samples of milk from 15 mothers were analysed, from which it appears that there are the very greatest variations in quantity and quality from time to time in the same person and in different individuals. The average quantity of milk contained in the breast at one time varied from 26·4 to 101·1 c.c., the majority being, however, over 40 and under 50 c.c. It was also shown that the percentage of fat, which varied from 2·3 to 4·4, was high when there was a short interval since the mother's last meal. It was also found that the percentage of fat does not increase as the child gets older, that there is nothing to show that the milk of women who were less robust in health was poorer than that of stronger women, and that as regards the wide variations no very definite reason can be seen for these.

It is very much to be hoped that this most valuable experiment will be continued, as hitherto the available information on the matter is exceedingly scanty and is more in the nature of *obiter dicta* than observation.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 95 largest English towns, having an estimated population of 17,639,816 persons in the middle of this year, 8238 births and 3930 deaths were registered during the week ending July 13th. The annual rate of mortality in these towns, which had continuously declined from 13·0 to 10·8 per 1000 in the seven preceding weeks, rose to 11·6 per 1000 in the week under notice. During the 13 weeks of the second quarter of this year the mean annual death-rate in these 95 towns averaged 13·1 per 1000, while in London during the same period the average death-rate did not exceed 12·4 per 1000. The annual death-rates last week in the several towns ranged from 4·3 in Warrington, 4·5 in Bath and in Wallasey, 4·9 in Walthamstow, 5·8 in Dewsbury, and 6·3 in Ilford, to 15·8 in Merthyr Tydfil, 16·5 in Stockport, 16·6 in Salford, 17·1 in Liverpool, and 17·4 in Tynemouth.

The 3930 deaths from all causes in the 95 towns last week were 282 in excess of the number in the previous week, and included 378 which were referred to the principal epidemic diseases, against numbers declining from 423 to 342 in the four preceding weeks. Of these 378 deaths, 148 resulted from measles, 89 from infantile diarrhœal diseases, 72 from whooping-cough, 34 from diphtheria, 27 from scarlet fever, and 8 from enteric fever, but not one from small-pox. The mean annual death-rate from these epidemic diseases last week was equal to 1·1 per 1000, against 1·1 and 1·0 in the two preceding weeks. The deaths attributed to measles, which had been 172, 173, and 139 in the three preceding weeks, slightly rose to 148 last week, and caused the highest annual death-rates of 1·2 in Leeds, 1·4 in Sunderland and in South Shields, 1·9 in Stockport, 2·2 in Liverpool, 2·7 in Gateshead, and 5·7 in Rotherham. The deaths of infants under two years of age referred to diarrhœa and enteritis, which had been 55, 75, and 72 in the three preceding weeks, rose to 89 last week, and included 24 in London and its suburban districts, 10 in Liverpool, 6 in Birmingham, 4 in Salford, and 4 in Hull. The fatal cases of whooping-cough, which had been 96, 61, and 69 in the three preceding weeks, were 72 last week; 30 deaths were recorded in London and its suburban districts, 5 in Liverpool, and 3 each in Bristol, Manchester, Salford, and Sheffield. The deaths attributed to diphtheria last week numbered 34, and were equal to the average in the six preceding weeks; 8 deaths occurred in London, 4 in Leeds, and 2 each in Cambridge, Manchester, Salford, and Rotherham. The deaths referred to scarlet fever, which had declined from 26 to 15 in the four preceding weeks, rose to 27 last week, and included 4 in London, 3 in Birmingham, 3 in Liverpool, and 2 each in Preston, Leeds, Sheffield, and Newcastle-on-Tyne. The fatal cases of enteric fever, which had been 9, 15, and 10 in the three preceding weeks, declined to 8 last week, which was the lowest number recorded in any week of the current year, and included 2 deaths in London.

The number of scarlet fever patients under treatment in the Metropolitan Asylums and the London Fever hospitals, which had steadily increased from 1213 to 1417 in the seven preceding weeks, had further risen to 1477 on Saturday last; 227 new cases of this disease were admitted to these institutions during the week, against 188, 195, and 201 in the three preceding weeks. These hospitals also contained on Saturday last 903 cases of diphtheria, 632 of measles, 437 of whooping-cough, and 39 of enteric fever, but not one of small-pox. The 980 deaths from all causes in London were 89 in excess of the number in the previous week, and were equal to an annual death-rate of 11·3 per 1000. The deaths referred to diseases of the respiratory system, which had been 112, 126, and 131 in the three preceding weeks, were 127 last week, and were 8 in excess of the number in the corresponding week of last year.

Of the 3930 deaths from all causes in the 95 towns last week, 185 resulted from different forms of violence, and 362 were the subject of coroners' inquests. The causes of 39, or 1·0 per cent., of the deaths registered were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, Nottingham, Portsmouth, Salford, and in 68 other smaller towns. The 39 uncertified causes of death last week included 9 in Liverpool, 8 in Birmingham, 3 in Stoke-on-Trent, and 2 each in Gillingham, in Bootle, and in Gateshead.

HEALTH OF SCOTCH TOWNS.

In the 18 largest Scotch towns, with an aggregate population estimated at 2,182,400 persons in the middle of this year, 1133 births and 560 deaths were registered during the week ending July 13th. The annual rate of mortality in these towns, which had been 14·0 and 14·6 per 1000 in the two preceding weeks, declined to 13·4 per 1000 in the week under notice. During the 13 weeks of the second quarter of this year the mean annual death-rate in these Scotch towns averaged 15·5 per 1000, against 13·1 per 1000 in the 95 large English towns during the same period. Among the several Scotch towns the annual death-rates last week ranged from 6·3 in Govan and in Motherwell, 7·5 in Kilmarnock, and 7·6 in Partick, to 17·3 in Perth, 20·2 in Ayr, and 23·8 in Hamilton.

The 560 deaths from all causes were 49 fewer than the number in the previous week, and included 50 which were referred to the principal epidemic diseases, against 57 and

60 in the two preceding weeks. Of these 50 deaths, 16 resulted from measles, 16 from infantile diarrhœal diseases, 9 from whooping-cough, 4 from diphtheria, 3 from scarlet fever, and 2 from enteric fever, but not one from small-pox. These 50 deaths from the principal epidemic diseases were equal to an annual death-rate of 1·2 per 1000, against 1·1 in the 95 large English towns. The deaths attributed to measles, which had been 30, 32, and 18 in the three preceding weeks, further fell to 16 last week, and included 5 in Dundee, 4 in Hamilton, and 2 in Partick. The deaths of infants under two years of age referred to diarrhœa and enteritis, which had been 13, 9, and 13 in the three preceding weeks, rose to 16 last week; 4 deaths were registered in Dundee, 2 in Glasgow, 2 in Leith, and 2 in Hamilton. The fatal cases of whooping-cough, which had been 21, 8, and 15 in the three preceding weeks, declined to 9 last week, of which number 4 occurred in Dundee, 2 in Glasgow, and 2 in Aberdeen. The deaths attributed to diphtheria and scarlet fever showed but slight variation from recent weekly numbers. The 2 fatal cases of enteric fever were recorded in Glasgow and Perth respectively.

The deaths referred to diseases of the respiratory system in the 18 Scotch towns, which had steadily decreased from 107 to 69 in the five preceding weeks, further declined to 61 last week; 30 deaths were attributed to different forms of violence, against 18 and 25 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 22 town districts of Ireland, having an estimated population of 1,157,014 persons in the middle of this year, 538 births and 349 deaths were registered during the week ending July 13th. The annual rate of mortality in these towns, which had been 16·0 and 13·8 per 1000 in the two preceding weeks, rose to 15·7 per 1000 in the week under notice. During the 13 weeks of the second quarter of this year the mean annual death-rate in these Irish towns averaged 19·0 per 1000; in the 95 large English towns the corresponding death-rate did not exceed 13·1 per 1000, while in the 18 Scotch towns it was equal to 15·5 per 1000. The annual death-rates in the several Irish towns last week were equal to 16·0 in Dublin (against 11·3 in London), 15·9 in Belfast, 14·3 in Cork, 12·7 in Londonderry, 19·0 in Limerick, and 26·6 in Waterford, while in the 16 smallest of these towns the mean annual death-rate did not exceed 13·6 per 1000.

The 349 deaths from all causes in the 22 Irish towns were 43 in excess of the number in the previous week, and included 26 which were referred to the principal epidemic diseases, against numbers declining from 37 to 27 in the four preceding weeks; of these 26 deaths, 11 resulted from diarrhœal diseases, 9 from measles, 3 from whooping-cough, 1 from diphtheria, 1 from enteric fever, and 1 from typhus, but not one from scarlet fever or from small-pox. These 26 deaths from the principal epidemic diseases were equal to an annual death-rate of 1·2 per 1000, and coincided with the rate in the 18 Scotch towns; in the 95 large English towns the annual death-rate from these diseases last week was equal to 1·1 per 1000. The deaths attributed to diarrhœa and enteritis, which had been 10, 10, and 6 in the three preceding weeks, rose to 11 last week, and included 9 of infants under 2 years of age; 7 deaths were recorded in Dublin and 3 in Belfast. The deaths referred to measles, which had been 11, 5, and 9 in the three preceding weeks, were again 9 last week, and comprised 7 in Dublin and 2 in Belfast. The fatal cases of whooping-cough, which had been 10 and 8 in the two preceding weeks, further declined to 3 last week. The fatal case of diphtheria was recorded in Galway, that of enteric fever in Belfast, and that of typhus in Kilkenny.

The deaths referred to diseases of the respiratory system in the 22 Irish towns, which had steadily declined from 84 to 47 in the five preceding weeks, rose to 55 in the week under notice. Of the 349 deaths from all causes, 106, or 30 per cent., occurred in public institutions, and 2 resulted from different forms of violence. The causes of 13, or 3·7 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 95 large English towns the proportion of uncertified causes of death last week did not exceed 1·0 per cent.

VITAL STATISTICS OF LONDON DURING JUNE, 1912.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 4·8 per 1000 of the population estimated at 4,519,754 persons in the middle of the year. In the three preceding months the rates were 5·2, 4·3, and 4·8 per 1000 respectively. The lowest rates last month were recorded in Chelsea, the City of Westminster, Hampstead, Stoke Newington, Wandsworth, and Camberwell, and the highest rates in St. Pancras, Finsbury, Stepney, Southwark, Bermondsey, Deptford, and Greenwich. The prevalence of scarlet fever showed an increase over that recorded in other recent months; among the various metropolitan boroughs this disease was proportionally most prevalent in Fulham, St. Pancras, Stepney, Bermondsey, Battersea, Deptford, and Greenwich. The Metropolitan Asylums Hospitals contained 1380 scarlet fever patients at the end of last month, against 1296, 1201, and 1222 at the end of the three preceding months; the weekly admissions averaged 184, against 141, 129, and 158 in the three preceding months. Diphtheria was slightly less prevalent than in the preceding month; the greatest proportional prevalence of this disease last month was recorded in Hampstead, St. Pancras, Bethnal Green, Southwark, Bermondsey, and Greenwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals at the end of the month was 877, against 1045, 982, and 877 at the end of the three preceding months; the weekly admissions averaged 112, against 122, 103, and 117 in the three preceding months. The prevalence of enteric fever showed a marked decline from that recorded in the preceding month; this disease was proportionally most prevalent in Paddington, St. Marylebone, St. Pancras, Stepney, and Woolwich. There were 32 enteric fever patients under treatment in the Metropolitan Asylums Hospitals at the end of last month, against 52, 43, and 32 at the end of the three preceding months; the weekly admissions averaged 7, against 7 and 8 in the two preceding months. Erysipelas was proportionally most prevalent in Finsbury, Shoreditch, Bethnal Green, Stepney, Southwark, and Deptford. The 32 cases of puerperal fever notified during the month included 5 in Stepney, 4 in Fulham, 3 in Islington, and 2 each in St. Pancras, Bethnal Green, Poplar, Bermondsey, Wandsworth, and Camberwell. The 7 cases of cerebro-spinal meningitis belonged respectively to Paddington, St. Pancras, Islington, Stepney, Southwark, Camberwell, and Deptford; and the 7 cases notified as poliomyelitis included 2 in Hackney and 2 in Bethnal Green.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided; the death-rates from all causes are further corrected for variations in the sex and age constitution of the several boroughs. During the four weeks ending June 29th the deaths of 3821 London residents were registered, equal to an annual rate of 11·6 per 1000 of the population; in the three preceding months the rates were 14·0, 14·3, and 13·3 per 1000. The death-rates last month ranged from 7·2 in Hampstead, 8·4 in Stoke Newington, 8·8 in Lewisham, 9·1 in Hackney, and 9·7 in Kensington and in Wandsworth, to 14·1 in Finsbury, 14·9 in Shoreditch, 15·2 in Holborn, 15·7 in Bermondsey, 16·7 in Southwark, and 19·1 in the City of London. The 3821 deaths from all causes included 353 which were referred to the principal infectious diseases; of these, 179 resulted from measles, 16 from scarlet fever, 29 from diphtheria, 67 from whooping-cough, 5 from enteric fever, and 57 from diarrhœa and enteritis among children under two years of age. No deaths from any of these diseases was recorded last month in Chelsea or in the City of London; in the other boroughs the lowest death-rates were in Hampstead, Stoke Newington, Hackney, and Lewisham; and the highest rates in Hammersmith, St. Pancras, Holborn, Finsbury, Southwark, and Bermondsey. The 179 deaths from measles were 20 in excess of the corrected average number in the corresponding period of the five preceding years; this disease was proportionately most fatal last month

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING JUNE, 1912.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated population in the middle of 1912.	NOTIFIED CASES OF INFECTIOUS DISEASE.												DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.									Deaths from all causes.	Death-rate per 1000 living.†
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	**4,519,754**	—	**794**	**524**	**1**	**40**	—	**32**	**260**	**7**	**7**	**1665**	**4·8**	—	**179**	**16**	**29**	**67**	**5**	**57**	**353**	**1·0**	**3821**	**11·6**
West Districts.																								
Paddington	142,362	—	22	15	—	3	—	—	6	1	—	47	4·3	—	1	—	—	2	—	3	6	0·5	121	11·7
Kensington	171,746	—	31	9	—	—	—	—	8	—	—	48	3·6	—	2	—	1	1	—	3	7	0·5	118	9·7
Hammersmith	122,750	—	25	16	—	1	—	—	5	—	—	47	5·0	—	10	—	—	1	—	2	13	1·4	121	13·3
Fulham	155,402	—	44	17	—	2	—	4	2	—	—	69	5·8	—	3	—	2	2	—	—	7	0·6	116	10·1
Chelsea	65,397	—	5	8	—	—	—	—	1	—	—	14	2·8	—	—	—	—	—	—	—	—	—	56	11·6
City of Westminster	157,248	—	14	12	—	2	—	1	5	—	—	34	2·8	—	5	—	1	2	—	2	10	0·8	140	13·0
North Districts.																								
St. Marylebone	116,155	—	22	16	—	4	—	—	6	—	—	48	5·4	—	—	1	1	4	—	—	6	0·7	88	10·5
Hampstead	85,966	—	4	16	—	—	—	—	2	—	—	22	3·3	—	1	—	1	—	—	—	2	0·3	42	7·2
St. Pancras	216,145	—	60	39	—	4	—	2	13	1	—	119	7·2	—	17	—	1	5	—	1	24	1·4	204	12·9
Islington	326,398	—	47	38	—	—	—	3	7	1	—	96	3·8	—	15	1	3	2	—	3	24	1·0	267	11·1
Stoke Newington	50,581	—	5	3	—	1	—	—	2	—	—	11	2·8	—	1	—	—	—	—	—	1	0·3	31	8·4
Hackney	222,986	—	33	17	—	1	—	1	12	—	2	66	3·9	—	2	—	1	4	—	—	7	0·4	149	9·1
Central Districts.																								
Holborn	48,026	—	7	5	—	—	—	—	3	—	—	15	4·1	—	6	—	1	—	—	1	8	2·2	52	15·2
Finsbury	86,130	—	18	12	1	—	—	1	13	—	—	45	6·8	—	5	2	1	1	—	1	10	1·5	90	14·1
City of London	18,695	—	4	—	—	1	—	—	—	—	—	5	3·5	—	—	—	—	—	—	—	—	—	25	19·1
East Districts.																								
Shoreditch	110,430	—	8	16	—	—	—	—	16	—	—	40	4·7	—	—	—	—	5	1	5	11	1·3	120	14·9
Bethnal Green	127,985	—	16	26	—	—	—	2	13	—	2	59	6·0	—	2	—	—	1	—	3	6	0·6	104	10·7
Stepney	277,315	—	64	35	—	5	—	5	28	1	1	139	6·5	—	7	—	2	6	1	2	18	0·8	244	12·0
Poplar	161,597	—	13	22	—	2	—	2	11	—	1	51	4·1	—	2	—	3	3	—	2	10	0·8	156	13·0
South Districts.																								
Southwark	190,017	—	34	29	—	2	—	1	24	1	1	92	6·3	—	26	—	3	3	1	6	39	2·7	233	16·7
Bermondsey	125,260	—	34	21	—	—	—	2	7	—	—	64	6·7	—	22	3	2	4	—	1	32	3·3	147	15·7
Lambeth	297,550	—	36	27	—	2	—	1	18	—	—	84	3·7	—	12	—	2	6	—	6	26	1·1	248	11·2
Battersea	167,589	—	47	21	—	1	—	—	9	—	—	78	6·1	—	—	1	1	6	—	2	10	0·8	124	10·3
Wandsworth	321,881	—	37	26	—	2	—	2	12	—	—	79	3·2	—	3	2	—	3	1	10	19	0·8	227	9·7
Camberwell	261,591	—	29	16	—	3	—	2	11	1	—	62	3·1	—	23	3	—	2	—	1	29	1·4	216	11·2
Deptford	109,377	—	41	12	—	—	—	1	11	1	—	66	7·9	—	4	1	—	—	1	—	6	0·7	92	11·6
Greenwich	96,994	—	42	17	—	—	—	1	4	—	—	64	8·7	—	1	—	—	2	—	2	5	0·7	78	10·8
Lewisham	165,249	—	32	23	—	2	—	—	5	—	—	62	4·9	—	2	1	1	—	—	1	5	0·4	106	8·8
Woolwich	121,932	—	20	10	—	2	—	1	6	—	—	39	4·2	—	7	1	2	2	—	—	12	1·3	106	12·1
Port of London	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup. † The death-rates are corrected for variations in sex- and age-constitution of the populations of the several boroughs, the population of England and Wales being taken as the standard.

in Hammersmith, St. Pancras, Holborn, Southwark, Bermondsey, and Camberwell. The 16 fatal cases of scarlet fever were 11 fewer than the corrected average number and included 3 in Bermondsey, 3 in Camberwell, 2 in Finsbury, and 2 in Wandsworth. The 29 deaths from diphtheria were just below the average; of these, 3 belonged to Islington, 3 to Poplar, 3 to Southwark, and 2 each to Fulham, Stepney, Bermondsey, Lambeth, and Woolwich. The 67 fatal cases of whooping-cough showed a decline of 30 from the corrected average number; the greatest proportional mortality from this disease was recorded in St. Marylebone, St. Pancras, Shoreditch, Stepney, Bermondsey, Lambeth, and Battersea. The 5 deaths from enteric fever were 2 below the corrected average, and belonged respectively to Shoreditch, Stepney, Southwark, Wandsworth, and Deptford. The mortality from diarrhœa and enteritis among children under two years of age was proportionately greatest in Paddington, Shoreditch, Bethnal Green, Southwark, Lambeth, and Wandsworth. In conclusion, it may be stated that the aggregate mortality in London last month from the principal infectious diseases was nearly 7 per cent. below the average.

THE SERVICES.

ROYAL ARMY MEDICAL CORPS.

Colonel H. H. Johnston, C.B., Deputy-Director of Medical Services at Gibraltar, has arrived home on leave of absence.

Lieutenant-Colonel A. J. Luther has been transferred from Cahir to Fermoy and appointed to command the Military Hospital. Lieutenant-Colonel E. H. L. Lynden-Bell, Commanding the Military Hospital at Meerut Cantonment, United Provinces, has arrived home on eight months' leave of absence from India. Lieutenant-Colonel F. H. Burton, at present holding charge of the Military Hospital at Warley, has been placed under orders by the War Office for service abroad during the coming trooping season. Lieutenant-Colonel T. B. Winter, commanding the Ninth Company of the Royal Army Medical Corps stationed at Colchester, has been appointed to officiate as Assistant-Director of Medical Services, Colchester district, during the absence on leave of Colonel F. J. Jencken.

Major P. H. Collingwood has been transferred from the Military Hospital at Devonport to Crownhill for duty. Major G. J. A. Ormsby has taken up duty at Landour as Senior Medical Officer. Major H. L. W. Norrington has arrived home on leave of absence from Malta. Major J. J. W. Prescott, D.S.O., Adjutant of the Royal Army Medical Corps School of Instruction, Northumbrian Division, Newcastle, on the completion of tenure of his appointment, has been transferred to the Military Hospital at Cosham for duty. Major G. M. Goldsmith, on transfer from Thayetmyo, Burma, to the Presidency Brigade, has been appointed to command the Military Hospital at Lebong. Major A. A. Seeds has joined for a tour of duty in India.

Captains J. H. Brunskill, P. Power, and T. S. Blackwell, serving at the Curragh, Kilkenny, and Belfast respectively, have been selected to take part in a medical staff tour to be held in the Aldershot Command during August next. Captain D. Ahern, company officer at Cairo, has arrived home on leave of absence. Captain F. A. Stephens has been appointed Specialist in Ophthalmology to the Second (Rawal Pindi) Division. Captain W. C. Nimmo, on arrival home from India for duty, has been appointed to Chatham. Captain R. G. Meredith has been transferred from Pontefract to Lichfield. Captain J. F. Grant, commanding the Military Hospital at Bhamo, has been granted six months' general leave of absence home from India. Captain J. G. Foster has been transferred from the Ninth (Secunderabad) Division to the Sixth (Poona) Division. Captain C. Ryley, at present serving at Chatham, has been placed under orders for service abroad during the coming trooping season. The following officers have been selected to attend the next courses for promotion at the Royal Army Medical College: Captains M. J. Cromie, G. W. W. Ware, W. C. Nimmo, M. Keane, C. F. White, F. C. Sampson, T. S. Blackwell, P. J. Marett, and A. D. O'Carroll.

Captain J. A. Anderson, on completion of a tour of service at Bloemfontein, has been detailed for duty in the Scottish Command. Captain E. Potts, on termination of leave of absence, has been posted to the Dublin District. Captain D. De C. O'Grady has been transferred from the Military Hospital at Peshawar to the Second (Rawal Pindi) Division. Captain A. H. Jacob has been appointed to the Station Hospital at Rawal Pindi Cantonment on transfer from Attock. Captain T. C. C. Leslie has arrived home on duty from Maritzburg, Natal. Captain R. S. Smyth has been granted three months' leave of absence home from India. Captain A. C. Amy has been appointed to hold charge of the Cantonment General Hospital at Ranikhet. Captain R. L. Argles has taken up duty as Staff Surgeon at Steamer Point, Aden. Captain H. H. J. Fawcett has been appointed Adjutant of the Royal Army Medical Corps School of Instruction at Maidstone. Captain P. G. Easton, specialist in midwifery and diseases of women and children in the Aldershot Command, has been appointed to hold Medical Charge of Families in the Marlborough Barracks, Aldershot.

Lieutenant R. T. Vivian has been appointed Anæsthetist to the Military Hospital at the Curragh. Lieutenant E. M. Parsons-Smith has joined the Egyptian Army. Lieutenant G. O. Chambers has taken over charge of the Military Hospital at Bradford. Lieutenant L. K. F. Way, at present serving at Hilsea, has been placed under orders for service abroad during the coming trooping season.

INDIAN MEDICAL SERVICE.

Colonel R. W. S. Lyons has been appointed Principal Medical Officer of the Sirhind and Jullundur Brigades, Third (Lahore) Division.

Lieutenant-Colonel J. L. T. Jones, Bombay Presidency, has arrived home on leave of absence from India. The services of Lieutenant-Colonel A. O. Evans have been placed at the disposal of H.E. the Commander-in-Chief by the Government of India for employment as Principal Medical Officer of the Kohat Brigade. Lieutenant-Colonel A. Nott has returned to India on completion of furlough. Lieutenant-Colonel J. J. Pratt has been elected an Honorary Fellow of the Royal College of Surgeons, England.

The services of Major G. King, officiating civil surgeon at Midnapore, have been placed at the disposal of the government of Bihar and Orissa. H.E. the Governor of Bombay in Council has been pleased to appoint Major V. B. Bennett to officiate as a Civil Surgeon of the first class during the absence on leave of Lieutenant-Colonel J. B. Smith. Major A. E. Walter, superintendent of the Government X Ray Institute at Dehra Dun, has arrived home on leave of absence. Major C. B. Prall, superintendent of the Central Prison at Bareilly, has been granted 11 months' combined leave of absence.

Captain H. S. Hutchinson has been appointed to officiate as Personal Assistant to the Surgeon-General with the Government of Bombay. The services of Captain J. H. Horne have been placed temporarily at the disposal of the Government of Madras Presidency. Captain J. F. James, civil surgeon at Dinajpur, has been placed on deputation to Amritsar for a course of training at the malarial fever classes. Captain W. Tarr, civil surgeon at Nimar, has been appointed civil surgeon at Pachmarhi. An extension of six months' leave has been granted to Captain J. W. H. Babington. Captain W. J. Fraser, officiating civil surgeon at Chanda, has been transferred to Chindwara. Captain C. A. Gill has been granted 18 months' leave of absence. Captain L. J. M. Deas, second-class agency surgeon, has been appointed, on return from furlough, as Agency Surgeon to the Eastern Rajputana States. Captain D. Munro has been appointed to officiate as Professor of Ophthalmic Surgery and Ophthalmic Surgeon to the College Hospital, Calcutta, during the absence on leave of Lieutenant-Colonel E. P. Maynard. The services of Captain F. P. Wernicke have been placed at the disposal of the Chief Commissioner of the Central Provinces. Captain E. J. C. McDonald, officiating civil surgeon, Sibsagar, has been appointed a Supernumerary Medical Officer in Assam and posted to Dibrugarh.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Lieutenant Ludwig S. B. Tasker is confirmed in his rank.

The undermentioned to be Lieutenants (on probation):—Cadet Lance-Corporal Joseph Hugh Ward, from the Edinburgh University Contingent, Officers Training Corps (dated June 10th, 1912). Gerald Ferdinand Victor Leary (dated

0, 1912.
Woolwich 121,932
Port of London 20 10
* Including membranous croup. † The death-rates are corrected for variations in sex- and age-constitution of the populations of the several boroughs, the population of England and Wales being taken as the standard.

June 11th, 1912). Cadet John Campbell, from the Royal College of Surgeons in Ireland Contingent (July 1st, 1912).

Army Medical Service.

Colonel William Coates, C.B., from the Army Medical Service, Territorial Force, to be Colonel (dated July 17th, 1912).

TERRITORIAL FORCE.

Royal Army Medical Corps.

North Midland Mounted Brigade Field Ambulance, Royal Army Medical Corps: Lieutenant Arthur Avent resigns his commission (dated July 17th, 1912).

1st South Midland Mounted Brigade Field Ambulance, Royal Army Medical Corps: Major William H. Stephen to be Lieutenant-Colonel (dated June 21st, 1912).

1st East Anglian Field Ambulance, Royal Army Medical Corps: Major Francis A. Brooke to be Lieutenant-Colonel (dated April 1st, 1912). Lieutenant Octavius R. Ennion to be Captain (dated June 30th, 1912).

2nd East Anglian Field Ambulance, Royal Army Medical Corps: Lieutenant Rees Phillips to be Captain (dated May 21st, 1912).

3rd East Anglian Field Ambulance, Royal Army Medical Corps: Lieutenant John R. Pooler to be Captain (dated June 24th, 1912).

3rd Home Counties Field Ambulance, Royal Army Medical Corps: Lieutenant Thomas F. Roche resigns his commission (dated July 17th, 1912).

2nd West Lancashire Field Ambulance, Royal Army Medical Corps: William Robertus Pierce to be Lieutenant (dated May 22nd, 1912).

2nd London (City of London) Field Ambulance, Royal Army Medical Corps: Lieutenant-Colonel Joseph N. Brown resigns his commission, and is granted permission to retain his rank and to wear the prescribed uniform (dated July 17th, 1912).

Major William S. Sharpe to be Lieutenant-Colonel (dated July 17th, 1912.

4th London General Hospital, Royal Army Medical Corps: Lieutenant-Colonel F. de H. Hall resigns his commission (dated July 17th, 1912).

2nd Northern General Hospital, Royal Army Medical Corps: Rawdon Augustus Veale to be Captain, whose services will be available on mobilisation (dated March 28th, 1912).

2nd London Sanitary Company, Royal Army Medical Corps: Frederick Goodman Caley to be Lieutenant (dated June 14th, 1912).

3rd Home Counties Field Ambulance, Royal Army Medical Corps: the retirement of Lieutenant-Colonel John de Z. Marshall and the promotion of Lieutenant-Colonel George A. Edsell are antedated to Oct. 22nd, 1911.

Attached to Units other than Medical Units.—Lieutenant-Colonel and Honorary Surgeon-Colonel Robert de la P. Beresford resigns his commission, and is granted permission to retain his rank and to wear the prescribed uniform (dated July 17th, 1912). Lieutenant Frank J. Hathaway resigns his commission (dated July 17th, 1912). The appointment of Captain Henry Mellor Fort is antedated to June 8th, 1912.

For Attachment to Units other than Medical Units.—William Scott to be Lieutenant (dated April 15th, 1912). Lee Danby Buxton Cogan (late Second Lieutenant, 1st Volunteer Battalion, The Northamptonshire Regiment) to be Lieutenant (dated May 17th, 1912).

THE INDIAN SUBORDINATE MEDICAL SERVICE.

The General Medical Council has adopted recommendations with regard to the admission of members of the Assistant Surgeon branch of the Indian Subordinate Medical Department to examination for British qualification.[1] Only certificates of qualifications of intending candidates drafted by the India Office will be considered.

THE ALEXANDER MEMORIAL PRIZE.

This prize, consisting of £50 and a gold medal, is awarded every third year to the writer of the best essay on a subject connected with military medicine, surgery, or hygiene. The competition is open to executive officers of the Royal Army Medical Corps on full pay, with the exception of the professors and assistant professors of the Royal Army Medical College during their term of office. The subject for the next prize is the following: "The Management in the Field of Mumps, Measles, Scarlet Fever, and Small-pox," and it is stated that the question of treatment need not be considered. No essays should exceed about 20,000 words, exclusive of tables, which may be added in the form of appendices, and they should be sent in to the secretary of the prizes committee, Major H. B. Fawcus, R.A.M.C., Royal Army Medical College, on or before Dec. 31st, 1914, bearing a motto, and accompanied with a sealed envelope marked with the same motto, and containing the name of the competitor.

[1] THE LANCET, June 15th, 1912. p. 1630.

ARCHIVES DE MÉDECINE ET PHARMACIE NAVALES.

In the number for May Dr. Liffran, Médecin de 1re Classe de la Marine (Staff-Surgeon), discusses the importance to the French navy of antityphoid vaccination in view of the 800 or so cases and 85 deaths from typhoid fever which occur in that navy yearly. The principle, he tells us, was first established in the laboratory by Chantemesse and Widal in 1888, but it was Sir Almroth Wright who first got it used in practice in the British army, and it was first tested in South Africa in 1900. In India, where 90 per cent. of the army is vaccinated voluntarily, it has reduced the attacks of typhoid fever to one-third and the deaths to one-fifth of the proportions obtaining previously. Germany, seeing these good results, took the method up in her war against the Herreros with great benefit, and the United States sent Major Russell over to study Sir A. Wright's method, and introduced voluntary vaccination into its army in 1909, where the results were so obviously beneficial that in 1911 the operation was made compulsory for all officers and men under 45 years of age. It is being taken up by the American navy and is employed in the Japanese army (voluntarily) with marked success. France commenced the practice (at the hands of Professor Vincent and Professor Chantemesse) during a typhoid epidemic on the Morocco-Algerian frontier. 283 soldiers were vaccinated; among them appeared only a single slight case, but there were 171 attacks, 6 per cent., and 22 deaths, among the other 2632 men present. The various vaccines used in different countries, their preparation, use, dosage, and the reactions following are given in great detail. Voluntary antityphoid vaccination has just been authorised in the French fleet, and the benefit to the French sailor, especially in view of his risks when on leave, is strongly insisted on in this very valuable paper. Dr. Gloaguen, Médecin de 1re Classe de la Marine (Staff-Surgeon), discusses the coal-trimmers of the French navy. They are recruited from the deck hands, but without sufficient medical examination. Their work is done in the bunkers, with too much coal dust about them and not enough air. Their pay (extra pay is probably meant) is 5 francs a month, not enough to cover the wear and tear of their clothes, so they go in rags, and their work makes them so dirty that even soap, he says, cleans them but imperfectly. As they are not by regulation required to be of good physique, they are very frequently disappointed when they desire to change their rating and become stokers, for then some half of them fail to pass the medical examination. He proposes that the stringent medical examination should precede their enrolment as coal-trimmers. It is difficult to find out what becomes of cases of pulmonary phthisis, so there is much interest in the paper by Dr. Fossard, Médecin Principal de la Marine (Fleet-Surgeon), which gives account of the disposal of those among the 1200 dockyard men of Indret who, during the years 1898-1910, were diagnosed as suffering from tubercle of the lungs. Twelve were seen in 1898: 7 have died, 2 left, 1 was invalided, and 2 were still, 13 years later, employed in the yard. There were in all 197 cases (12 per 1000 workers annually), of whom 64 died, one-third of the cases, 4 per 1000 of the strength. Half survive and are still employed in the dockyard; the others have disappeared. Of all cases 12 per cent. died in the year they were first treated, and 13 per cent. in the year following that; if they survived so long there was hope for them. The naval medical prize for 1911 has been assigned to Médecin Principal (Fleet-Surgeon) J. J. Vergues for his work on "The Ear and Typhoid Fever."

CONTINENTAL ANGLO-AMERICAN MEDICAL SOCIETY.—The annual luncheon of this society will be held this year on Thursday next, July 25th, at 1.30 o'clock, at the Adelphi Hotel, Liverpool. The honorary secretary is Dr. Leonard N. Robinson, 28, Rue de Ponthieu, Paris.

Correspondence.

"Audi alteram partem."

FLEMING'S (HECHT'S) MODIFICATION AND THE WASSERMANN TEST.

To the Editor of THE LANCET.

SIR,—Mr. A. Fleming asks, in his letter in THE LANCET of July 13th, What is the Wassermann reaction? May I suggest the following definition? The Wassermann reaction is the absorption of complement which occurs when a syphilitic serum is incubated with certain emulsions of lipoid substances. It will be noticed that I do not specify the source of the complement which is to be absorbed, nor the method used for determining whether absorption has or has not taken place. The former I believe to be entirely immaterial theoretically: complement is equally absorbed whatever its origin, whether human, as in the Hecht-Fleming modification or in my own, or from the guinea-pig, as in the original method. In the same way, the method that is used to determine whether absorption takes place or not is equally immaterial theoretically; if complement has been absorbed it will cause no hæmolysis whatever hæmolytic system is used, and *vice versâ*. But all the methods proposed are not equally accurate and convenient in practice. This arises from the fact that the test, to give the best and most delicate results, must be accurately quantitative, and must be carried out with accurately standardised reagents. Too strong an antigen, for example, will give positive results with all sera, whether normal or syphilitic, and if it is too weak every serum will react negatively. It is necessary, therefore, if the test is to be employed in the case of feeble reactions, such as are obtained early or late in the disease, to use an antigen which is so strong as to be on the verge of giving a positive reaction with a normal serum, without actually doing so. The accurate standardising of the antigen I regard as being far more important than the source of the complement and the nature of the hæmolytic system. In this connexion I may remark that I find that Sachs's antigen is an enormous advance on any that I have previously used, the only disadvantage to its use being that slight differences in the rapidity with which it is diluted appear to make enormous differences in the potency of the resulting emulsion, but this, as I test each dilution of emulsion before I use it, is not of much importance.

Another point is this. It is quite useless to attempt to standardise the antigen by testing it with syphilitic serum, as some bacteriologists seem still to think possible. If the serum used is a powerful one it may give a positive reaction with an antigen or with a dilution of an antigen which will only react positively with one syphilitic serum in a hundred. The only available method of standardising the antigen is by the use of normal serum, and it is not the slightest safeguard to add a known syphilitic serum (unless its potency is also known) as an additional control.

The second important point is that the corpuscles which are used in testing for the presence or absence of complement ought to be sensitised to an equal extent in each test. The most convenient method is to have them fully sensitised, for in this case a slight excess of amboceptor does not matter. If this is not done, and if, for example, partially sensitised corpuscles are used with reagents which have been balanced for fully sensitised ones, a positive result may be obtained with a non-syphilitic serum. The reason is that complement is absorbed by antigen from a normal serum, and if only a small amount is left there may not be enough to dissolve the partially sensitised corpuscles, whereas with the control test, in which the serum has been mixed with normal saline instead of antigen, there may be enough complement to give good hæmolysis. This, I believe, is what occurred in the positive results which Mr. Donald obtained by Fleming's method with non-syphilitic sera. The possible fallacy with Fleming's method is not that complement may be absent (it practically never is), but that the amount of amboceptor varies. This Fleming avoids to a certant extent by using a small quantity of corpuscles, so that in the great majority of cases they are fully sensitised. I suspect that Mr. Donald used a much stronger antigen than Mr. Fleming is in the habit of doing, or a larger amount of corpuscles in the test. It is undoubtedly possible to balance the ingredients used in Fleming's method so that no serum ever gives a positive reaction; but if this is done there will be a very considerable number of sera which ought to react positively, but which do not. This, at least, is my own experience. There are some other objections to it, which I believe I avoid by my own modification. In the first place, there is the length of time taken in standardising the emulsion of antigen, which I believe to be so necessary before the actual test; working, as I do, with fully sensitised corpuscles, hæmolysis occurs in about five minutes, so that the preliminary testing takes but a very short time. Secondly, there is the admitted fact that not all sera are available, even if examined quite fresh, and that if they are kept more than a few hours before use, the proportion becomes important. I have only found a single example out of many thousand sera that I have examined which did not contain ample complement for the test, and the amount is sufficient in sera several days (in one case, eight) old. This alone is an enormous advantage. Lastly, as a minor point, in the method I use human corpuscles are employed, and these are always obtainable; I use, indeed, just such an emulsion as is used in opsonic work.

My method is briefly as follows. I find that the average amount of complement present in human serum is sufficient to hæmolyse about one-fifth of its volume of human corpuscles if fully sensitised. (Where very great refinements of accuracy are required the exact amount is determined for each serum under examination.) My hæmolytic system therefore consists of a volume of a 20 per cent. emulsion of thoroughly washed corpuscles equal to that of the serum to be tested. These are sensitised by rather more than the amount of an amboceptor serum necessary for complete sensitisation; this is determined once for all for each batch of amboceptor serum before use. I standardise the antigen by preparing a series of dilutions, 1 in 10, 1 in 12½, 1 in 15, &c., of the antigen, and mixing four parts of each of these dilutions with one of normal human serum. (As a rule, several of these tests are carried out, and before I make use of a new antigen it is always tested with about half a dozen normal sera.) I prepare a control with 1 part of normal serum and 4 of normal saline. Each of these dilutions is then incubated for five minutes in a water-bath; and I may remark in passing that it has passed my comprehension why bacteriologists should continue to incubate at this stage for an hour, when the combination has taken place in so much shorter a period. After this incubation I add one volume of the 20 per cent. emulsion of human corpuscles, with the appropriate amboceptor serum, either previously mixed or added separately. After two or three minutes the tubes are stirred, and hæmolysis is allowed to take place. I aim at getting nearly complete hæmolysis in the control tube, so that there is a small deposit of undissolved corpuscles. This indicates that all the complement is used to full advantage, and if even a small amount is absorbed its absence will be readily noticed. In one of the tubes containing antigen there will be rather less hæmolysis and therefore a rather larger deposit of corpuscles. This is the dilution to use. If a stronger dilution is used some or all normal sera will give positive results, whereas if a weaker one be employed some weakly reacting sera will give negative results, and the test will not be so sensitive as might be the case. With ingredients balanced in the manner I have described the test is, I believe, as sensitive as it is possible to make it. I can determine the slightest amount of absorption of complement over the normal, and on theoretical grounds I fail to see what more can possibly be accomplished by any method. And there is not the slightest doubt that it is by far the quickest process of all that have been suggested: this is an advantage, in that it enables me to repeat the test, using several different antigens, as I frequently do in doubtful cases.

The actual test is carried out on exactly the same lines as the standardisation I have just described, and follows almost exactly the technique used by Fleming. For the control, 1 volume of the serum to be tested is mixed with 4 parts of normal saline; for the actual test, 1 volume is mixed with 4 parts of the dilution of antigen which has been found the most suitable by the method given above. After five minutes' incubation 1 volume of the 20 per cent. emulsion of sensitised corpuscles is added, just as before.

The tubes are stirred after a few minutes, allowed to settle, and the results read off in a few minutes more. The use of human corpuscles is not necessary, and I occasionally use sheep's corpuscles, sensitising them with about a double dose of antisheep amboceptor. I find this method is not quite so good, and its only advantage is that this amboceptor can be readily obtained commercially, whereas good anti-human amboceptor cannot always be got. On the other hand, it is not always possible to get sheep's corpuscles, and in any case there is a greater chance of bacterial contamination in blood from the slaughter-house than in the case of human corpuscles.

In conclusion, may I earnestly request my fellow-workers to give this method a trial. I shall be pleased to supply such further details as cannot be conveniently included in this letter. I am, Sir, yours faithfully,

48, Harley-street, W., July 14th, 1912. W. D'ESTE EMERY.

To the Editor of THE LANCET.

SIR,—In your last issue Mr. Fleming criticises the paper of Mr. Donald[1] which contrasts the value of his (Mr. Fleming's) modification of the Wassermann reaction with the original test, and in the course of his letter states that Mr. Donald's colleague, Dr. McIntosh, was the first in 1909 to cast doubts upon the reliability of the reaction. To my mind there is in this and other remarks a suggestion that Dr. McIntosh, through Mr. Donald, is persevering in 1912 in an attack upon the Fleming reaction which he started in 1909. Since Dr. McIntosh is not likely to see Mr. Fleming's letter for some time, I take upon myself the task of assuring Mr. Fleming that Dr. McIntosh is not personally responsible for the details or results of Mr. Donald's work. He merely, in good faith, suggested the piece of research to a fellow worker in this laboratory.

Mr. Fleming also takes exception to a passage referring to his reaction which occurs in a treatise on syphilis written by Dr. McIntosh, and, since my name also appears on the title-page of this book, I will endeavour to explain our position. In the course of writing we had to review the modifications of the Wassermann reaction, including Fleming's, which, however, was considered together with the earlier method suggested by Hecht. Our personal knowledge of this reaction was relatively slight, and we therefore formed our opinions from the published works of the supporters of this method. At that time there was a very general view that Hecht's reaction was liable to give positive results in cases other than syphilis, and, in our opinion, if this were so Hecht's reaction could not be held to be diagnostic in the sense that a positive reaction enabled one to swear to the presence of syphilis—in the absence of certain other diseases. Among other evidence we read Mr. Fleming's paper[2] and learned that among 277 "supposed non-syphilitics," 10 gave a positive reaction. In the presence of the criticisms which had been levelled against Hecht's test it was clearly necessary for Mr. Fleming to make every effort to prove that the reaction was correct in these ten cases, and the evidence he produced was as follows. Two of the cases were lepers, three had gonorrhœa, two tubercle, one boils, one leukæmia, and one cystitis. If we allow the reaction in the cases of leprosy and gonorrhœa (although three positive out of six is possibly a little high) we are left with five to be accounted for. Not the slightest evidence of syphilis, however, was produced in these cases, and, further, it did not appear that any serious effort had been made to decide the point. Nevertheless, Mr. Fleming stated that "the only disease I have met with giving positive results, apart from syphilis, is leprosy." Perhaps some of these cases were those referred to by Mr. Fleming in his present letter as having been cured by "606," but when we wrote our criticism this was, of course, unknown to us, and in any case the value of such evidence is to some extent discounted by the fact that syphilitic lesions may be cured by injections of physiological saline solution.[3]

In face of the facts mentioned above and similar observations by other workers, we do not consider our summary of this reaction to be unfair. We said:[4] "It appears to us, therefore, that there is insufficient evidence on which to accept this modification in the diagnosis of syphilis," and we expressly stated that our requirements were high and that by the diagnosis of syphilis we meant the certain diagnosis without any error, and not the diagnosis for tentative clinical purposes in a small hospital. If Mr. Fleming is able to perform his reaction without error it is necessary for him to show that he can do so by publishing a suitable series of cases and investigating more thoroughly those in which his test appears to be wrong.

It was this unsatisfactory state of much of the literature dealing with Hecht's reaction that led us to suggest to Mr. Donald that he should test independently by Fleming's method the sera which we tested by Wassermann's, and this is the only responsibility for Mr. Donald's work which we can assume. Anyone who is personally acquainted with Mr. Donald will recognise that he is not to be influenced in his observations by any outside agency. He took Mr. Fleming's papers and followed the directions precisely, and where such directions were not precise he endeavoured to work in the spirit of the author. Undoubtedly he favoured Fleming's method in every way: thus he only used fresh sera when Mr. Fleming said old sera might be used; he did not test moribund patients or infants, and so on. Naturally he studied the whole literature on the subject and is undoubtedly an excellent technician. His views, therefore, appear to us to be of some value and not to be treated with scorn. In our opinion much of the genuine criticism which has been directed against him is beside the point. For instance, Dr. Panton says that better results would have ensued if the corpuscles had been more thoroughly washed or if the blood had been citrated. If this be so, why did Mr. Fleming not say so, or why has no one emphasised the importance of this technique by comparative tests in a later publication?

Anyone who may desire to gauge the value of these tests honestly is in a difficult position. He follows the directions of the author exactly and then learns that his results are considered to be valueless because he has not adopted some apparently trivial procedure which is considered to be essential by someone else, but which has never been published in the detailed manner which is indispensable for scientific purposes. Thus, Mr. Fleming says that "something in the salt solution" vitiates the results "on certain occasions." Surely this is a remarkable statement to make without proving that the vitiation was really due to something in the saline. He cannot expect us or anyone else to believe that this phenomenon was the cause of Mr. Donald's failure.

After all, Mr. Donald's conclusions do not differ very greatly from the results of some other workers' tests of this method. He found that the Wassermann reaction with human heart antigen gave fewer positive results than Fleming's with guinea-pig heart, a small number of these exhibiting no evidence of syphilis. There is no reason to suppose that guinea-pig's heart and human heart antigens differ to any marked extent. Of course, with Sachs's antigen, according to Sachs[5] and ourselves,[6] it is a different matter, but the question of this antigen was only introduced to show that anyone who wanted to do the test in the best possible manner could retain the certainty of the Wassermann technique without losing the "delicacy" which is a feature of those tests (Hecht's, &c.) which utilise "active" serum.

There are several points in Mr. Fleming's letter which are open to dispute, but this is not the object of this letter. We should like, however, to make it clear that neither Mr. Donald, we believe, nor we ourselves have ever looked upon Fleming's test as a "useless" procedure. It is quite obvious that in suitable hands it has a certain clinical application, otherwise it could not be used as a routine in this hospital by our colleague Dr. Panton. Nevertheless, we doubt whether a positive Fleming is infallible, while this is claimed for the Wassermann. Our doubt is due to the fact that very few workers attempt to meet criticism in the usual way. When someone says that the value of the Wassermann reaction is diminished by its common occurrence

[1] R. Donald: THE LANCET, vol. i., 1912, p. 1752.
[2] A. Fleming: THE LANCET, vol. i., 1909, p. 1512.
[3] J. McIntosh and P. Fildes: Zeitschrift für Immunitätsforsch., Orig., 1912, xii., p. 164.
[4] Idem: Syphilis from the Modern Standpoint, London, 1911 (Arnold).
[5] H. Sachs: Berliner Klinische Wochenschrift, 1911, p. 2066.
[6] J. McIntosh and P. Fildes: Zeitschrift für Chemotherapie, Orig., 1912, I., p. 79.

in scarlet fever, at once a number of workers put the matter to the test and show that this is not so when certain precautions are taken. Mr. Fleming should act in a similar way to banish doubt in this matter.

I am, Sir, yours faithfully,

PAUL FILDES.

The Bacteriological Laboratory, London Hospital, E., July 15th, 1912.

ACUTE DUODENAL PERFORATION.

To the Editor of THE LANCET.

SIR,—Mr. D'Arcy Power, in his lecture on the above subject in THE LANCET of July 13th, makes the following remark: "That in acute appendicitis the pain, tenderness, and rigidity are limited to the lower part of the abdomen." I cannot agree with him because I have operated on many cases in which the pain was confined to the upper abdomen. I presume that the lecture was delivered to students, and I quite agree that it is wise to impress upon them the advantage of an accurate diagnosis. It is far more important to teach them that a positive diagnosis is impossible and that all cases of acute abdomen should be explored without a moment's delay. I have opened a large number of abdomens and I have often found the unexpected, and I believe it is the experience of all surgeons. I note, too, that in describing the operation Mr. Power states that when the fibres of the submucous tissue are reached it is known "by the grating of the needle." In a large experience I have never felt it, and it appears to me that a student who is taught to depend upon it will soon be disillusioned when he operates himself.

I am, Sir, yours faithfully,

J. LIONEL STRETTON, L.R.C.P. Lond., M.R.C.S. Eng.,
Senior Surgeon, Kidderminster Infirmary and Children's Hospital.

July 14th, 1912.

AUSTRALIA FOR TUBERCULOUS CASES.

To the Editor of THE LANCET.

SIR,—During the last few years I have seen a large number of cases both of early and late phthisis among immigrants who have come from Great Britain to Australia. These persons allege that they have been advised by doctors to proceed here as the climate would effect a cure in their cases. Most of these immigrants are lads and young men, and their lot on arrival here is a very unhappy one. They are totally unfit for the hard work of a farm and they either have to be sent to a consumptive sanatorium or shipped back to England. If what they state about medical advice be true, it is surely very cruel for any medical man to take upon himself the responsibility of sending a patient 12,000 miles from home, where he arrives very often almost penniless and where he receives a very scant welcome. If these cases are curable they can be dealt with much more satisfactorily at home, and if not it is surely better for them to die surrounded by the care and affection of relatives than among indifferent strangers who resent having this burden cast upon them. I trust that this warning may do something to prevent such cases being sent to Australia.

I am, Sir, yours faithfully,

RICHARD ARTHUR, M.D. Edin.,
President, Immigration League of Australasia.

Sydney, June 12th, 1912.

FORCIBLE FEEDING OF SUFFRAGE PRISONERS.

To the Editor of THE LANCET.

SIR,—Mr. McKenna has now forwarded to us the so-called medical counter-memorial in favour of the forcible feeding of suffrage prisoners which he stated to the House of Commons he had received and for the publication of which we pressed.

This counter-memorial is as follows:—

Copy. 220196/607.

The Right Hon. Reginald McKenna.—We the undersigned registered medical practitioners desire to place on record our unanimous opinion that the operation of feeding persons who refuse nourishment in the ordinary way by means of a stomach-tube, or otherwise, is not, if carried out under the usual rules of procedure, either dangerous or painful. Any inconvenience which may arise to the individual operated upon can be at once removed by their taking the food provided in the ordinary manner. It is the duty of the medical officers of H.M. prisons to prevent prisoners from attempting, or committing, suicide by starvation or from injuring their health and strength by declining nourishment; and the only course left for adoption in these cases is to feed such prisoners by the mouth by means of suitable apparatus. We therefore most respectfully trust that the medical officers who have to carry out these duties, however unpleasant they may be both to the operators and those operated upon, may receive the support and protection of yourself as the Home Secretary and their superior authority. We beg to remain, your obedient servants.

No names are appended to this memorial. Mr. McKenna states that he withholds the names of the signatories lest they should be annoyed.

To Mr. McKenna we have sent the following reply:—

SIR,—In reply to your letter of the 13th July and to a brief passage which has appeared to-day in three newspapers, we repeat the protest we have already been obliged to make in our letters of the 30th ult., 4th and 10th instant, against your repeated and studied misrepresentations of the medical memorial signed in 24 hours by 117 practitioners and presented by us on June 27th, for, although you have our subsequent correspondence before you, you state that the medical memorial did not suggest that your practice of forcible feeding should be discontinued merely as regards one particular class.

This is not correct, for as we reminded you in our first letter on the 30th ult., and again on the 4th and 10th inst., our memorial protested against the forcible feeding of "one particular class of prisoners," namely, the suffrage prisoners. Further, you say in your letter just received that you have entirely failed so far to ascertain the views of the memorialists on the general question of the treatment of all prisoners—i.e., felons, a matter with which, as we have repeatedly informed you, the memorialists did not deal. Although you thus admit that you have never had any knowledge of the views of the memorialists on this general question you nevertheless actually made to the House of Commons on July 4th a written statement in answer to Mr. Goldman (and published on July 4th in several papers) in which you represented to the House that you had much knowledge of the views of the memorialists and that they were unable to make any suggestion on the subject. In this matter you have thus directly contradicted yourself. We have read the copy of a counter-memorial you have sent us purporting to have been written by certain medical practitioners. It, however, has no value as a medical opinion, since it is unsigned and unsupported by any names of such practitioners. From internal evidence it is obviously official and not medical, for two-thirds of its sentences are your own and taken almost verbatim from your statements in the House of Commons made on the following dates—April 15th and 17th, May 28th, June 20th and 28th, and July 2nd, all of the present year (see Hansard).

The first statement in this counter-memorial is as follows: "Feeding persons by means of a stomach-tube or otherwise (*sic*) is not, if carried out under the usual rules of procedure (*sic*), either dangerous or painful."

From a medical standpoint this sentence is an evasion of the truth. It does not state what is meant by the words "otherwise" and "usual rules of procedure," and evidently your counter-memorial refers to something which has no resemblance whatever to the forcible feeding practised under your directions in H.M.'s prisons, for your practice on the suffrage prisoners has proved so dangerous to "health and life" that, as stated by Mr. Ellis Griffith in the House of Commons (Hansard, June 26th), you have been compelled to release large numbers of them in order to save their lives, and as you are well aware you have inflicted by your treatment an incalculable amount of physical pain and mental anguish on your victims.

We note, as everyone must, that you produce no medical evidence in support of the irresponsible statements of your anonymous memorial, or that your forcible feeding of the suffrage prisoners has been anything else than a dangerous torture.

We are, Sir, yours faithfully,

AGNES SAVILL,
CHAS. MANSELL MOULLIN,
VICTOR HORSLEY,
} Secretaries to the Medical Memorial.

July 16th, 1912.

DIET AND INOPERABLE CANCER.

To the Editor of THE LANCET.

SIR,—Dr. T. J. Horder in THE LANCET of July 13th raises one or two questions of the deepest interest, but I wish to point out that there is absolutely no reason to choose between diet and surgery, for both can be used. No one could possibly advise against surgery in the present state of our knowledge. I invariably advise operation in malignant growth, and have done so in several cases which are still alive and well, having been on the uric-acid-free diet since operation, and better had they been on it before operation, as it is well known that this diet diminishes shock and favours the healing of wounds. I do not, however, claim the present immunity of these cases as due to diet; the data are insufficient. But if many cases are put on the uric-acid-free diet and are operated on as far as may be possible, we shall be able to judge of their recurrences as contrasted with ordinary cases, and shall thus obtain a measure of the effects of diet. Operated cases are really best for our purpose (provided they live long enough), as the exact nature of the disease is known. No patient need lose flesh and become physically and mentally depressed, apart from the growth and its effects, for the exact quantity of proteid required in relation to body weight can be given on any diet, and Case 10, described in THE LANCET of June 1st, p. 1496, gained

weight for a time. Dr. Horder might, therefore, have modified the diet by increasing the proteid in Case 5, in place of taking her off it entirely; but his difficulty, and mine also, was that these patients were frightened of a diet which was strange to them, and it is useless to argue with hospital patients about proteid quantities. Better educated patients can understand that there is no danger of starvation.

I offer these patients the diet that I myself live on, and on some modifications of which I have lived for nearly 30 years. It is the same that is to-day being lived on by hundreds and thousands throughout the world. There is nothing for them to fear, but they have been brought up in the baseless superstition that their present diet, which is not only the cause of cancer but of almost innumerable diseases and sufferings, is the only one on which it is possible to live. Yet the English are the great world travellers, and those who have travelled know well that only a small minority of the human race live as we do. If anyone who has charge of a large number of patients will test the effects of diet in cancer, the question of nutrition can at first be left out of the problem by keeping it the same in all. But as some cases have been reported in which a diet low in proteid appears to have aided recovery, or at least to have prolonged life and diminished suffering from a disease which, like gout, chiefly affects the vigorous and highly nourished, and as a similarly low proteid diet is a useful temporary measure in the cure of gout, I think we should regard nutrition as offering a further problem to be worked out after the effect of freedom from uric acid has been investigated. Among others, the late Dr. George Keith in his "Fads of an Old Physician" (London: Adam and Charles Black), chapter on Cancer, p. 83, says, "I know of no class of cases, where the benefit that follows a change of living is so marked, and I am not sure that I know of any in which the change is so difficult to make," the exact parallel of our present experiences.

Dr. Keith follows these remarks by details of some of his own cases, which, if not entirely conclusive, are at least most interesting and suggestive reading; he even persuaded a professional friend to carry out a small research in pauper cases with the result that the duration of life in these cases was undoubtedly prolonged.

Dr. Keith also raises a point of much interest in reference to reports on the prevalence of malignant disease among vegetarian natives of India—a matter which has given rise to much misunderstanding both with regard to the etiology of cancer and other diseases, and which I may therefore again explain. The fact that these Indian races suffer furnishes no reason whatever for doubting the power of diet either in prevention or cure, for as their food contains various forms of the pulses, which are rich in xanthin, it would be extraordinary if they were free from cancer. As a matter of fact, they are not free from it or from other uric acid disease, for vegetarianism is one thing and freedom from uric acid another and quite different thing. Dr. Keith's results are all the more valuable because they are empirical; the treatment was not applied with scientific accuracy, and all foods that introduce uric acid were not ruled out, but this only makes the partial success of the low proteid diet more remarkable.

As regards cases treated with success by others, Dr. Keith makes two references to the *British Medical Journal*, but these are unfortunately so indefinite that I have not been able to verify them. I hope some of your readers may be able to do so.

I am, Sir, yours faithfully,

July 16th, 1912. ALEXANDER HAIG.

THE MEDICAL PROFESSION AND THE NATIONAL INSURANCE ACT.

To the Editor of THE LANCET.

SIR,—I shall endeavour to restate shortly what I said at some length when addressing the Edinburgh and Leith Division of the British Medical Association on Thursday, July 11th. The two points which I specially dealt with were: (1) the terms formulated by the profession as a condition of their working the National Insurance Act; and (2) the continuance of so-called negotiations with the Chancellor of the Exchequer, who appears to be the main, if not the sole, authority under the Act.

With regard to the terms, it is essential to bear in mind that by the Act it is proposed to take 10,000,000 of employed persons out of the sphere of existing private practice and to make the doctors give them medical attendance for the sum of 4*s.* 6*d.* per head per annum, while 1*s.* 6*d.* is allowed for drugs and appliances. About 4,000,000 persons were estimated to be in Friendly Societies, or in some other way entitled to medical attendance on a contract basis, before the passing of the Act. These two sets of persons make up the 14,000,000 or more who are to become insured. The profession is necessarily perturbed when it realises that the Act proposes the removal of those 10,000,000 or more of persons from the sphere of private practice—a number which, with the addition of those in Friendly Societies before the passing of the Act, means one-third of the total population of the country. When Ireland is left out, it is estimated that there will be 12,000,000 of insured employed persons in Great Britain. At the rate of 4*s.* 6*d.* per head per annum, a sum of £120 per annum would be available for each of 22,500 doctors affected by the Act. There is no allowance for travelling expenses in either town or country. The doctors realise that they will thus have to make the remainder of their gross incomes out of the other two-thirds of the population, which, it ought to be remembered, includes the wives and children of the poorest classes of insured persons; while from the gross income somewhere about one-third has to be allowed for expenses, at least in rural and semi-rural areas.

In Scotland many areas, of which Edinburgh and Leith are two, will not accept any capitation rate; but where the capitation method of remuneration is acceptable the demand is for 8*s.* 6*d.*, with, in addition, payment for mileage and for extras. This is also the demand of the profession as voiced in the last Representative Meeting of the British Medical Association. When to this 8*s.* 6*d.* is added 1*s.* 6*d.* for medicines and appliances, a sum of 10*s.* per head is reached. The Act provides 6*s.* only, so that whatever is required above that sum has to be obtained from Parliament. Parliament would thus have to find £2,500,000, or, if Ireland demanded her share in such a contribution, and, as will probably be the case, there are 15,000,000 rather than 14,000,000 of insured persons, Parliament would have to vote £3,000,000 annually for this purpose. I personally believe that the mileage and extras demanded by the profession would require £2,000,000 more annually. Whatever amount these items may come to, it is only fair that the risk should be borne by Parliament and not be thrust upon the profession. Many of my brethren agree with the estimate I have given. The question therefore arises, Will the Chancellor of the Exchequer go to Parliament for the necessary £3,000,000 to £5,000,000? I ventured to predict weeks ago that Mr. Lloyd George would not dare to do so, and, when his surplus of £5,000,000 was relegated to its proper place, this view was strengthened. The Chancellor's recent letter to his *medical correspondent* has made the fact generally known that he cannot give even 8*s.* 6*d.*, much less the 10*s.*, with mileage and extras demanded by the profession. His statement in that communication may therefore be accepted as virtually final.

I now come to the second point—namely, the continuance of so-called negotiations. The word is a euphemism, for the profession has stated the terms on which it is prepared to adapt itself to the taking away, by an Act of Parliament, of so many millions of its patients. The terms were minimum terms; the profession in Edinburgh and Leith, as well as elsewhere, evidently abides by them, and there is no doubt their representatives will gladly take instructions to act accordingly, and not to depart from them on any point. We cannot imagine the Representative Meeting doing otherwise; and if it reaffirms the demands made at its last meeting, what is there to negotiate about? The terms cannot be granted by the Chancellor, and that ends the matter. Of course, there are nervous and timid persons in our profession who dread the result of steadfast action and straight issues, and there may be party politicians amongst us who, while running with the medical hare, hunt with the Government hounds, and who would, if they got their way, accept a dole of £1,000,000 or £1,500,000 to settle all the differences between Mr. Lloyd George and the profession. That small section has been yielded to from the outset down to this hour in the hope that their eyes might be opened and that disruption would be avoided. The hour has, however, now come when we must know the dissentients who may be deserters and traitors to

the medical cause next January. It is now, and not in the hour of conflict, they must be known. It is between now and the end of the year that our forces have to be finally organised to meet the changed circumstances forced upon us and upon 14,000,000 of our patients. And organisation will only be completed when the areas realise the fact that Mr. Lloyd George cannot grant them even the money demands they have made. For the sake of the public and the public health to which we endeavour to minister, the next months ought to be devoted to the prevention of the confusion, disorder, and chaos which will inevitably result in January unless the profession takes this decisive step now, and devotes itself, even more strenuously than hitherto, to the organisation of the insurance areas.—I am, Sir, yours faithfully,

Edinburgh, July 13th, 1912. W. RUSSELL, M.D.

To the Editor of THE LANCET.

SIR,—The figures given in Sir William Plender's report appear at first sight to justify the Chancellor's offer to pay medical men for attendance on insured persons at the rate of 4*s.* 6*d.* per head per annum, for, according to this report, the average amount received in private practice is 4*s.* 2*d.* per head of the population, but if the figures are more carefully examined and compared with the figures relating to contract practice which were presented to the Chancellor last month in a memorandum from the British Medical Association, it will be seen that the actuary's report more than justifies the medical men's claim to a capitation fee of 8*s.* 6*d.* in addition to extras, these possibly amounting to 2*s.* 6*d.*, that is, 11*s.* in all.

The actuary's figures show that in private practice 408,580 persons received in one year 537,185 attendances—that is, an average of 1·3 for each person, for which is paid 4*s.* 2*d.*; but the figures presented by the British Medical Association, which were most carefully prepared and may without doubt be accepted as accurate, show that when patients have no consideration of expense to prevent them consulting the doctor, that is, in contract practice, as distinguished from private practice, the average attendance received by each person is 3·75, so that if medical men are to be paid for this work at the same rate as they are for ordinary private practice, and surely they should be, they must receive a capitation fee of 12*s.*, for as 4*s.* 2*d.* is to 1·3 attendances so is 12*s.* to 3·75 attendances. The figures given above refer to contract work in the hands of general practitioners, and the average attendance is considerably lower than if practice in friendly society institutes is included in the calculation, for then the average attendance per member is as high as 4·6. Again, Sir William Plender's figures refer to all lives, while the Association's figures refer to selected lives only.

I think that it will be acknowledged that the conclusions of those medical men who have with an intimate knowledge studied this question for many years are proved to be fairly accurate, and that their claims are not so extravagant as some would have us believe.

I am, Sir, yours faithfully,

Bradford-on-Avon, July 15th, 1912. CHAS. E. S. FLEMMING.

To the Editor of THE LANCET.

SIR,—As a unit in the community and in the medical profession and one whom the wheel of fortune gives no longer, at any rate at present, the chance of voicing his views at the meeting of representatives of the British Medical Association, I would ask leave to say that every consideration is necessary to decide whether the profession ought to break off negotiations or not with the Insurance Commissioners. Divisions, as Mr. H. A. Ballance says in a circular letter which he has issued to the Association, in many cases are making up their minds prematurely, and before discussion can possibly be thorough. The profession has for its object the formation of an efficient medical service, and if it adheres to its convictions it is difficult to see what is gained by retiring to its tents. On the other hand, if the profession desires to initiate a constructive policy, as well as continuing to the last moment to struggle for a service under medical control, it has an opportunity, and a very urgent one in the opinion of many. The public medical service designed by the British Medical Association should be formed, and *without delay*, for in any case this will be of the utmost value to the community, as on it will be moulded any medical service under the Insurance Act—i.e., on the traditions and expert knowledge of the profession. And the first unit in the service should be the tuberculosis dispensary. Far-seeing and public-spirited sanitary authorities are moving in this respect, and rightly so, and (unless the profession initiates a network of these dispensaries) under the various and powerful forces which we know to be at work this work may be largely lost to the general practitioner and pass to the whole-time man or woman, as has school inspection already. If hospital staffing had been left to men who were independent of the practitioner and who were in any way the paid servants of the State, the profession would have found it practically impossible or extremely difficult to press for the organisation of medical work by the medical profession, as it is now doing, whether this be for right or wrong.

I am, Sir, yours faithfully,

F. G. BUSHNELL, M.D. Lond.,
Past Representative, Brighton Division B.M.A.

Worthing, Sussex, July 13th, 1912.

To the Editor of THE LANCET.

SIR,—The following quotation bearing on the income limit for insurance under the National Insurance Act in Pamphlet A, p. 3, enlightened me when I read it as to the fallacy of thinking that £160 per annum was the limit for the compulsorily insured.

Part III.—Employed Persons who are Excluded from Compulsory Insurance.

Para. 8.—Persons employed at a rate of £160 a year; but all persons engaged in manual labour must be insured whatever their earnings may be.

The pamphlet is issued by the National Health Insurance Commission (England) under date June, 1912.

Incidentally, this implies to me that all employed manual labourers are entitled to medical benefits at the rate of 6*s.* per annum (including drugs, &c.), no matter by how much their earnings exceed £160 a year. Perhaps some of your readers may have been as ignorant of this as I was.

I am, Sir, yours faithfully,

W. J. LE GRAND, M.D. R.U.I.

Alfreton, Derbyshire, July 10th, 1912.

MOTORING NOTES.

(FROM A SPECIAL CORRESPONDENT.)

A Telephone Service on the Main Roads.

AN extension of the Automobile Association and Motor Union Road Organisation is being inaugurated in the shape of a complete roadside telephone service for the use of members along every main road throughout the country. Patrol sentry boxes are now being erected at intervals of several miles along most of the main roads, and in each box will be installed a telephone communicating with the nearest exchange. A patrol will be on point duty at each box. The telephones will be at the service of members for all purposes free of cost; in the case of trunk calls the ordinary trunk fee being charged, and a schedule of such fees will be exhibited in each sentry-box. Members will be entitled to the services of the patrols either for the purpose of receiving or transmitting messages. Arrangements are already in progress, the union announces, for the erection of sentry boxes and the installation of telephones on the main roads round London and in the neighbourhood of Birmingham, Manchester, Leeds, Liverpool, Glasgow, Edinburgh, Norwich, Exeter, and Plymouth, and it is intended that all the important roads shall be included in the system. A complete list of the points where telephones have been, or will be, installed will be published shortly. This scheme may be of special value to members of the medical profession, not only in case of accident or breakdown, but for professional purposes, for communicating with their destination or their homes.

The Durability of Tyres.

The cost of tyres is, of course, the most important item in the upkeep of a car, and the "battle of the tyres" is as keenly fought to-day as it was ten years ago by rival manufacturers. Certainly the medical man using a car for

professional purposes is very deeply interested in the question of the efficiency and reliability of his tyres, apart from the not unimportant consideration of their cost. An inferior tyre, given to bursting or to puncturing easily, may cause a delay fraught with serious consequences to a patient urgently requiring medical aid. An interesting attempt to prove the durability of their tyres is being made by the Challenge Rubber Mills, the makers of the Victor tyres, who challenged the makers of several other tyres to a "test to destruction" of their respective products. The challenge not being taken up, the Victor manufacturers asked the authorities of the Royal Automobile Club to undertake an investigation, officially selecting the covers and observing the test. This the club at first agreed to do and then declined. So the Victor manufacturers have themselves arranged a trial over the roads of England, to be run under Royal Automobile Club conditions, and under the supervision of a committee of pressmen and private motorists. The trial will commence during the next few days and the result should be interesting to all motorists. But whatever the issue may be, the careful driver is really the arbiter of the length of life of the tyres. There is a marked difference in the wear and tear of a tyre running for a driver who travels to his destination at a high rate of speed, and then jams the brakes hard on, and the man who adopts a more reasonable and less destructive method of gradually slowing down and pulling up with a minimum application of brake power.

Cheaper Motoring and the American Invasion.

Of late much has been heard of cars made in huge numbers in the United States of America, standardised in every respect, and for these reasons sold at such a figure that the initial cost of motoring is reduced. What is more, most of these cars are sold with all the usual accessories included, so that the amount of the original cheque covers the complete cost of starting an automobile. The question that naturally presents itself is, Are they built of sufficiently good material and so assembled that the low figure of the first cost is not discounted by the possibilities of heavy repair and replacement bills? It would probably take the pages of the old-fashioned three-volume novel to enumerate and describe the crowd of recent arrivals in the American invasion. Prominent among them is the Flanders, which is sold by the Studebaker Corporation of England, Limited, of 143-145, Great Portland-street, London, W. As some medical men have written inquiring as to the value of these cars and questioning whether many repair disbursements should be expected, I visited Great Portland-street and thoroughly examined one, and, what is more, tested it by a run of over 100 miles on a wet day, up Willenhall-road, Woolwich, through London, and then viâ Kingston, Staines, Windsor, Maidenhead, across to Beaconsfield, through High Wycombe, up the hill to Godstone School, and home viâ Gerrard's Cross and Brentford. The car given me for this purpose was fitted with a neat two-seated body, a hood, and a serviceable wind screen; complete with all accessories likely to be needed it is priced at £185. The motor has four cylinders cast *en bloc*, the bore being 3⅜ inch and the stroke 3½ inch. This is unlike the present fashionable tendency, which favours a long stroke, chiefly because the stroke is not considered when estimating the horse power for the motor tax. It is probable that this is the only advantage that a long stroke possesses. The compression is medium, and this, too, is a good feature, as a high compression tends to pre-ignition and resultant "knocking." The crank case is of aluminium with stamped steel hand hole covers. The crank shaft is of drop forged steel, of ample size, and with plenty of metal in the corners. Formerly there used to be much talk of the grain of the metal, and it was said that the grain should follow round the bend, but in pot steels there is really no grain, and a stamped crank shaft is a sound thing, which, when made in quantities, can be turned out at a very low price. On many of the cheaper cars the old rule of one throw one bearing is disregarded, and here two bearings, very liberal in length, carry the crank. They are of babbit's metal, and the fitting on the one I examined was ground to micrometrical exactness, in addition to which packing pieces were provided for adjustment. The valves are large in regard to the cylindrical dimensions, and placed all on one side. The cam shaft, also a forging, has the eccentrics all made integral. The pistons have four ground rings, thus ensuring good compression, and the fly-wheels and crank shafts are balanced, so reducing vibration. The lubrication is by vacuum, by which a constant oil level is maintained, and the oil tank is above the crank chamber. The filler cap when screwed home pushes down a rod, thereby depressing a disc that otherwise closes the oil pipes leading to the crank chamber. When these pipes are submerged by the lubricant in the sump air cannot pass into the delivery pipes, and the flow stops, to start again directly the oil level is below the end of the pipe. Thus as long as oil is in the reservoir and the filler cap is screwed down firmly lubrication proceeds. The ignition is by an American kind of Bosch, and is dual—magneto and battery. The carburetter has a concentric float chamber, with a ring cork float, and the choke-tube is of an hour-glass form, with a cock which permits of easily flushing out and withdrawing all dirt from the base, and a jet which is readily taken out. The clutch is of the reliable leather-faced cone variety, and a rubber ring between the leather and clutch centre facilitates easy engagement. The gear-case is integral with the differential housing in the rear axle and provides three forward speeds and a reverse, which are worked by a single lever on the gate-change system. The propeller shaft is enclosed in a steel casing, which also acts as a torque rod, two radius rods being fitted to take the drive. The rear axle has ball bearings to take the driving and end thrusts, and roller bearings to carry the load at the wheels. All the brakes act on the rear hubs, one type being of the contracting steel bands variety, and the other having internal expanding rings operating on the same drum. The frame is of pressed steel channel section. The front springs are semi-elliptic and the rear full elliptic. Lubricators are fitted to all the shackle bolts. Cooling is by a centrifugal pump assisted by a belt-driven fan behind the radiator. The throttle and ignition-timing levers are below the steering wheel, and a foot accelerator is fitted between the clutch and brake pedals.

I found the car full of life, easy to drive, and a good hill climber, and though the foot accelerator is in an awkward place I managed to get a good speed out of it. The ignition being variable is certainly an advantage, especially on hills, but I am sure it would be better if the accelerator pedal were placed in another position. The carburetter was sensitive, and, in spite of the heavy roads, I got 20 miles to the gallon. The clutch engaged gently, and the car picked up well in traffic, frequently starting off after a halt on the top speed. If it were my car, I would fit some form of shock absorber; still it rode easily. I can recommend it to the professional man as a reliable car likely to give little trouble.

Remagnetising a Magneto.

After a certain time the magnets of a magneto need remagnetising. This is usually done by sending the magneto to the makers, who knock the poles of the magnets on an electro-magnet, and then slide the magnets off in a direction parallel to the faces, and repeat the operation (which is known as "stroking") until the magnets are sufficiently excited. The same results can be obtained by using the ordinary electric lighting continuous current. All that is needed is to know which is the north pole and which is the south pole. This is shown by bringing a pocket compass near to the magnet. The north pole of the magnet attracts the south and repels the north pole of the compass. Some magnetos, however, have their magnets stamped respectively N. and S. About 1 lb. of No. 16 gauge cotton-covered copper wire is then wound round the magnet in a right-handed direction, starting from the end of the U nearest to the south pole. This end of the coil of wire (which is known as a solenoid) is connected to the plus connexion of the current and the other to the negative. An adapter should be fitted to the lamp socket and a 32 candle-power lamp used, which will, with a 200 volt supply, pass under two ampères of current, which is all that is required. The current should be interrupted frequently, and then in about five minutes the magnets will be remagnetised. This can only be done if the current is continuous—that is, not alternating, and the positive current must pass in a right hand screw direction from the south pole of the magnet.

The 10 h.p. Two-seated Darracq.

Recently I gave one of these cases an extended test, and the advantages thus demonstrated were the silence, power, steadiness, and low petrol consumption. This last, with

the present price of petrol, is an important point, and the average was just under 30 miles to the gallon. The engine is cast *en bloc* with a bore of 68 mm. and a stroke of 120 mm. This reduction in bore and increase in stroke has, of course, the object of evading the higher tax, and at the same time to provide the needful capacity to give sufficient power. The petrol tank is mounted in front of the dash-board, covered by the scuttle, and with gravity-fed petrol this seems an advantage over the old position under the driver's seat, as the spirit has always sufficient pressure to lift the needle valve in the float chamber, which, with the former situation, was, at any rate on hills, not always the case. Ignition is by a Bosch high tension magneto with fixed firing, and cooling by a gilled tube radiator with fan- and gear-driven centrifugal pump. The clutch is of the leather-faced cone type, and I noticed that the driven member was sufficiently light to come to rest without delay, which is an important point in avoiding wear on the gears and in permitting easy changing. Three speeds forward and a reverse, all controlled by one lever in a gate quadrant, are provided, and the final transmission is by bevel drive. The springing is satisfactory, and though I drove over some rough country roads there was hardly any vibration or road shock. Both the driving shaft and the rear road wheel brakes alone were enough to hold the car on a steep hill in either direction. This car, with two-seated torpedo body, hood, screen, side and tail lamps, pump jack and tool outfit, is listed at £225, and seemed to me to be well worthy of the serious consideration of a practitioner.

Motors Left Unattended.

A case that might affect medical men who are their own chauffeurs was heard recently at the Bath city police court. The defendant was summoned for causing an obstruction, having left his car unattended for an hour and a quarter. The magistrates said that whereas in the old days a man could not leave his carriage about, so now the street could not be used as a garage. It is to be trusted that this action of the police will not be applied to medical men, who may in midwifery or operation cases have to leave their cars outside patients' houses often for more than an hour. The case in question was dismissed on payment of costs.

Petrol Gas Lighting for Cars.

In answer to various inquiries on this subject I have ascertained that with modern unbreakable mantles a car may be thus illuminated. Personally I prefer electricity. Those, however, who desire to try the petrol gas method can have their ordinary lamps converted to carry an inverted bijou sized burner, and this can be supplied from the petrol tank on cars which have pressure-fed carburetters. On gravity fed cars a small special tank must be fitted.

A Folding Clothes' Brush.

The medical motorist who does his own driving may occasionally, as a consequence of a small roadside adjustment, feel the need of a brush before resuming his professional round. An ingenious pocket brush, not occupying more space than a cigarette case, has been put on the market by Messrs. Brown Brothers, Limited.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

Mr. John Burns on Modern Pauperism.

THE President of the Local Government Board formally opened the new workhouse infirmary at Rawtenstall on July 13th. The infirmary was erected by the Haslingden union at a cost of £30,000. He said that whatever might be the future of the Poor-law system, hospitals, infirmaries, hostels, and convalescent homes would always be needed. He spoke also "of the always changing and ever-improving Poor-law service"—changing in the onward, the upward, and the right direction. The injured in our industrial life numbered every year 300,000. In many cases later on in life the Poor-law institution was the only refuge for those in the army of industry upon whom the lot fell. Pauperism as understood seventy or eighty years ago we have not with us either in the amount or the intensity, and, above all, not with the shame and the degradation that too frequently accompanied the condition of the poor a hundred years ago. As showing how pauperism had changed, 50 per cent. of the total amount of pauperism in the United Kingdom was due to disease or to sickness, to accident, or injury. In fact, failing a national medical service, the best of our Poor-law infirmaries provided for the very poor a national medical service of greater value and efficiency than some of the superficial critics of Poor-law administration were apt to admit. Poor-law administration had helped to diminish the ravages of consumption. Tuberculosis in ten years in Lancashire alone had diminished by 30 to 40 per cent. In Liverpool, of 4000 Poor-law consumptives 60 per cent. were paupers because they were consumptives.

Effect of Milk-feed on School Children in Salford.

The Salford Education Committee is about to make interesting experiments with school children. The School Canteen Subcommittee has accepted an offer to supply the scholars at the schools with half a pint of separated milk daily for four months free of charge. The Physical Care and Special Schools Subcommittee has requested the medical officer of health to make arrangements for the weighing of the children.

The Summer Session of the University.

The University activity is drawing to a close for the academic year. The other three Universities which form the quadrilateral of the North have for some time finished their academic work early in July. The University of Manchester next year will bring itself into line with the sister universities. The medical session next year will end early in July. In order to secure the necessary number of working days, the summer session instead of beginning late in April, or as was the practice some years ago, on May 1st, will begin about the middle of April, thus enabling the work to be completed before the advent of the "dog days" and their attendant quasi-paralysis of work.

Stockport and Its New Water-supply.

The new Kinder water works, which will supply Stockport and the surrounding districts with a reserve of 500,000,000 gallons of water, were opened on July 11th. The artificial lake was formed under conditions of unusual difficulty. It covers about 40 acres and has a capacity of 515,000,000 gallons and a depth of 95 feet at its deepest part. To get to a watertight foundation trenches had to be sunk to a depth of 280 ft. The top level of the water is 917 ft. above sea level. By the Act of 1899 the corporation is precluded from making any profit out of the water undertaking and it must charge the same ratio for water within as without the borough, which includes an area of 80 square miles. The population in the Stockport area has increased from 140,000 in 1901 to 171,000 in 1911, while in the same time the consumption of water has risen from 21·7 gallons a head to 25·5 gallons.

July 16th.

WALES AND WESTERN COUNTIES.

(FROM OUR OWN CORRESPONDENTS.)

Munificent Gift to the Cardiff Medical School.

ONE of the most gratifying incidents connected with the recent visit of the King and Queen to Cardiff was the gift by an anonymous donor of 10,000 guineas towards the building of a new physiological wing to the pathological block of buildings at King Edward VII.'s Hospital, as the Cardiff Infirmary will hitherto be known. The donor is now stated to be Mr. W. James Thomas, who a few years ago inherited from his grandfather large colliery undertakings in the Rhondda valleys. Mr. Thomas has taken a very special interest in the Cardiff medical institutions, and his latest gift is only one of many others to the hospital and medical school. At the last meeting of the council of the University College of South Wales and Monmouthshire a committee was instructed to report without delay as to the best means of carrying out the proposed extensions to the medical school. The complete scheme suggested will involve an additional expenditure of some £50,000, towards which sum it is hoped grants may be made from the Treasury and by a rate levied by the county councils concerned.

The Attendance of Non-medical Persons at Hospital Operations.

The Red Cross movement has been taken up with a great deal of enthusiasm in South Wales, and especially in Cardiff.

Many of those who have obtained certificates of competency in first-aid appear anxious to extend their knowledge beyond legitimate limits, and have made application—in some instances successfully—to be present at operations in public hospitals. At the last meeting of the board of management of the Cardiff Hospital a proposal was made that the medical board should draw up regulations governing the presence at operations of nurses and enrolled members of first-aid societies not on the staff of the hospital. A member of the committee very properly pointed out that it was quite unnecessary for members of Red Cross societies to have any knowledge of operations as they were only called on to render first-aid. This view was emphasised by other members of the committee, and Dr. Herbert Vachell said he hoped that the day was far distant when untrained nurses would be permitted to visit the operating theatre. The proposal was in the end amended so as to refer only to medical practitioners, medical students, and trained nurses.

The Bristol Dispensary for the Prevention of Consumption.

At a recent meeting of the Bristol Civic League the chairman of the Public Welfare Committee, Mr. F. Newton Colborne, made some interesting remarks on the work of the Tuberculosis Dispensary, which owes its origin to a gift of money made through, and under the control of, the league. He said that the relation of this institution to the sanatorium benefit section of the Insurance Act was being carefully considered by the dispensary committee in consultation with the municipal authorities. Since the dispensary was opened in February there have been 1900 attendances of patients at it; and the work of the whole-time officers (medical officer and nurse) has been supplemented by the help of two extra nurses from the public health department of the city. Owing to the regulation which allows no patient to come to the dispensary except on the recommendation of a medical practitioner, it has hitherto been possible to enlist the active help of the local profession.

An Unusual Visitor to a Children's Hospital.

The frequenters of a certain music-hall in Bristol have of late been entertained by the accomplishments of a chimpanzee. By way of celebrating his fourth birthday this animal paid a visit to the children's hospital, where he distributed toys and sweets to the in-patients, to their great delight and edification.

The British Dental Association at Bath.

The annual meeting of the Western branch of the British Dental Association was held at Bath last week. There was a good attendance of members. Mr. J. J. H. Sanders, of Barnstaple, the president, was presented with a silver salver and an illuminated address. Mr. Stuart Carter was installed as president, and gave an interesting address on the Dental Profession. The winter meeting of the society will be held at Taunton. The secretary (Mr. W. H. Goodman) stated that it was hoped the British Dental Association would hold its annual meeting in the West of England in 1915.

The Birth-rate of Bath.

The medical officer of health of Bath (Dr. W. H. Symons) states that the birth-rate for the "old city" in 1911 was 15·6 per 1000, the lowest on record; the previous minimum record was 17·2 per 1000 in 1909. For the "extended city" for the same period the rate was 17·2 per 1000. Dr. Symons, in his report, adds: "It would almost seem as if the pernicious principles of the Malthusian League were being adopted by the masses."

The Midwives Act in Somerset.

At Shepton Mallet, on July 12th, a woman was fined £1 13*s.* for practising as a midwife, not being certified under the Midwives Act of 1902. This is the first prosecution instituted by the Somerset county council since the passing of the Midwives Act.

Exeter City Asylum

The visiting committee of the Exeter City Asylum in its annual report for 1911, which has just been issued, states that during the year 434 patients were under treatment, 29 were discharged, and 55 had died. The patients remaining in the institution on Dec. 31st were 186 females and 164 males. The profits on the working of the asylum amounted to £1655, and this sum has been handed to the borough fund.

Death of Mr. H. H. Lovell.

Mr. Harry Haynes Lovell, of Chantry House, Whitford, Devon, died suddenly at Sidmouth on July 8th, where he had been staying for the benefit of his health. Mr. Lovell was born at Barnstaple, and after taking his medical qualifications was elected on the staff of the North Devon Infirmary, Barnstaple. Later he practised in the Midlands, and eventually went to Africa. About 12 years ago he retired from practice and went to reside in Devonshire. He was very popular there, was a member of the Axminster board of guardians, and represented Shute on the Devon county council. Mr. Lovell will be much missed in East Devon, and much sympathy is felt there for his widow. The funeral, which was largely attended, took place at Shute parish churchyard on July 10th.

July 16th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

The National Insurance Act and the Medical Staff of the Royal Infirmary of Edinburgh.

THE following statement was prepared by the committee of the honorary staff of the Royal Infirmary of Edinburgh for submission to the managers:—

We thank the managers of the Infirmary, through you, for granting the request of the honorary staff for this interview. The object the honorary staff had in view in asking for this conference was to bring under the notice of the managers (1) the changes in the present provisions for medical treatment which will be brought about by the National Insurance Act; (2) the attitude of the medical profession to the Act; and (3) the relations of the staff of this public charity to the profession at large.

Insured Persons and the Royal Infirmary.—It is estimated that one-third of the entire population will be insured, and that of the male population of 16 years and over 75 per cent. will be insured. Insurance under the Act implies that the State has undertaken to pay for the medical attendance of insured persons. They, as a class, cannot therefore be regarded as objects of charity entitled to make uncontrolled use of the out-patient department of the Infirmary. Further, when insured persons become in-patients, the Infirmary, under certain circumstances, may be entitled to a grant towards their maintenance from the Insurance Act funds. These altered relations have been brought about by the legislature and were not sought by the profession. We submit that such changes call for reconsideration of the existing arrangements at the Infirmary with a view to adapting these to the altered circumstances.

The Medical Profession, the Act, and the Royal Infirmary.—Another aspect of this question which the staff desire to bring under the notice of the managers is as follows. The medical profession has decided not to work the medical benefit section of the Act unless certain terms are definitely granted by the Commissioners. The Commissioners and the Government have been so dilatory in deliberating over these terms that the profession has had to take into consideration the possibility that their demands may not be granted, and to prepare for that eventuality. It may thus happen: 1. That medical benefit will be suspended, and that the money allotted under the Act for such benefit will be paid over to approved societies to make the best terms they can for medical attendance on insured persons. The profession has decided not to undertake contract work such as this might imply except on such terms as shall be acceptable to the profession, as represented in the local Medical Committees already elected in every insurance area. It is a fact that Friendly Societies are already attempting to get over some of their difficulties by trying to utilise such public medical charities as the infirmary. The members of the profession in Edinburgh, through its local Medical Committee, have strongly impressed upon the honorary staff of the Infirmary the necessity of bringing before the notice of the managers the probability of an extension of such action in the future, and they protest against the possibility of this great charity being used to undermine the united action of the profession. The staff fully realise the seriousness of this possibility, and, sympathising with their brethren, feel bound to support them by doing everything in their power to prevent its occurrence. Moreover, if such additional work were thrown upon the already overburdened out-patient departments, they would be quite unable to cope with it. 2. The Commissioners or Friendly Societies may profess to provide medical benefit by means of a small body of dissentients from the declared policy of the profession. Were this to happen, your honorary staff are expected by their brethren, and themselves desire, to do everything in their power, both as private consultants and as members of the staff, to discountenance such arrangements.

Sick poor not insured.—Apart from insured persons there are many thousands of sick poor to whom the staff will ever be ready and willing to give of its best, as it has done in the past, but the staff strongly represent to the managers that the time has arrived when it is of the first importance that steps should be taken to institute some efficient method of inquiry regarding the position of persons seeking advice at the Infirmary. They do not venture at present to propose any definite scheme, but they regard the initiation of such a scheme as urgent. The whole question of the relation of medical charities to insured persons is being dealt with all over Great Britain, and the staff realise that it would be a very serious matter if, as the result of inaction on the part of the managers, the medical profession in Scotland were to take up an attitude of hostility to the Royal Infirmary. It is hardly necessary to state to the managers that a large amount of the work done in the Infirmary is bestowed on persons recommended by medical men.

To this statement the following reply was made by the board of management of the Royal Infirmary, through Mr. W. S. Caw, the treasurer and clerk to the institution, who wrote:—

I am directed to say that the board sympathises with the staff in the difficult position in which they are placed at the present time, but is confident that the staff, while maintaining the fullest loyalty to their professional brethren, will always keep in view the true interests of the sick poor for whom this great charity exists and is supported.

I am also further directed to say that the Board, after discussion, arrived at the following conclusions:—1. That in present circumstances insured persons being entitled to medical benefits under the Insurance Act should not be treated in the out-patient departments of the hospital except in accident cases, urgent cases, and suitable consultation cases. 2. That the honorary staff shall be entitled to exercise the option (recognised in private practice) to decline to meet any practitioner in consultation should such a course be considered advisable, but always provided that no patient shall be denied immediate advice or treatment if that be requisite on medical grounds. 3. That the question of investigating the circumstances of applicants for the benefits of the hospital by means of almoners or otherwise is one which will require time and care in consideration owing to its undoubted complexity. The managers will, however, give the subject their most careful attention in due course.

July 16th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Ireland and the Insurance Act.

A SPECIAL supplement of the *Dublin Gazette* issued last week announced the appointment by the Insurance Commissioners of insurance committees for the various counties and county boroughs. Each committee consists of 24 members, of whom eight have been appointed by the county council or county borough council, four by the Commissioners, and 12 (also by the Commissioners) to represent insured persons. Of the four nominated by the Commissioners in each case two are medical practitioners. They have been selected by the Commissioners from lists of four submitted by the Conjoint Committee of the British and Irish Medical Associations after consultation with the profession in each locality. The Insurance Committees must in the first place proceed to dispose of certain formal business. They must elect chairmen, appoint clerks, make arrangements as to offices, place of meeting, and so on. Their first real business, however, is to administer the sanatorium benefit. The problem is difficult, since there is no existing mechanism for dealing with tuberculosis on a large scale. Many bodies, on the other hand, are ready with cut-and-dried schemes. The Local Government Board has prepared one which is being urged on the various county councils. The Women's National Health Association also has prepared a scheme and is anxious to contract for the treatment of tuberculosis in every stage. So far the medical profession has taken but little part. The local Medical Committee of county Kildare drew up a careful scheme, which was submitted to the Kildare county council and thrown aside without sufficient consideration. If the insurance committees and county councils hope to make the tuberculosis campaign a success, they must win the coöperation of the local practitioners. The advice of the latter, therefore, must be carefully considered before any scheme is adopted.

Belfast Insurance Committee.

The medical men named by the Insurance Commissioners as members of the Insurance Committee in Belfast are Dr. John R. Davison and Mr. James Blewitt, L.R.C.P. & S. Edin. Of the eight members of committee nominated by the county borough of Belfast, Dr. King-Kerr, Dr. Andrew Trimble, Dr. J. D. Williamson, and Dr. R. Thomson are members of the medical profession.

Reception of the Insurance Act.

In the north of Ireland, while considerable dissatisfaction has been expressed with this Act, amounting to protests in some of the towns, the main body of the people are insuring largely in the various sectarian and political societies.

July 16th.

CHELSEA HOSPITAL FOR WOMEN.—A dinner in aid of the Rebuilding Fund, at which the President, Viscount Castlereagh, M.P., M.V.O., and the President of the Ladies' Committee, the Countess of Ilchester, will preside, will be held at the Savoy Hotel on Wednesday, Nov. 20th next.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Model Hospital for Lyons.

M. Mosny presented to the Academy of Medicine on July 9th a communication in regard to the projected model hospital at Lyons. An exchange of views took place, in which M. Pinard expressed the opinion that consultations at the proposed model hospital should no longer take place as hitherto at fixed hours, but at any time throughout the day. This would necessarily entail a special and entirely new organisation for permanent consultations, but there can be no doubt such a project would be very acceptable to the working classes. Another observation related to those in great pain, whom it was proposed to remove into special rooms. But here the difficulties are numerous and no acceptable solution presented itself.

The Population of France during 1911.

The vital statistics of the French people for 1911 will shortly appear. They present a still more deplorable outlook than in preceding years. The number of deaths exceeded by 34,869 that of births—that is to say, the population of France diminished by that number during the preceding year. The birth-rate is the lowest yet attained. Only 742,114 children were born alive, as against 776,983 deaths. Each year unfortunately sees accentuated the unfavourable situation of France among increasing nations. Out of 10,000 inhabitants the mean annual excess of births is in Italy 112, in England 115, in Germany 141. The number of marriages in France is, however, satisfactory, being 307,788 in 1911, or only a fraction less than in 1910. France counts among the lands in which the marriage-rate is comparatively high. The number of divorces, always on the increase, is also somewhat higher than in 1910, being 13,058. The deaths were more numerous in 1911 than in 1910 in nearly all the departments. Relatively to the total population, it is the departments of Normandy which, as in preceding years, furnish the highest mortality. It is in these departments, as well as in some parts of the centre of Brittany, Provence, the Champagne, Oise, and even Seine et Oise, that are found the *arrondissements* in which the death-toll is generally abnormal in relation to the distribution by age of the inhabitants. It is to be noted, however, that if the proportional number of deaths is notably higher in France in comparison with other countries, this is due to the fact that France is a country that contains a relatively great number of old people by reason of its low mortality in later years. The small number of births is the demographic element that is characteristic of the French people. The number of births has decreased since 1910 in 83 departments. The departments of high or low mortality are always almost the same; the first in Brittany, the Nord and the Est, the second in the valley of the Garonne and Burgundy which have for some time been decreasing in population. While the birth-rate is at the present time falling in numerous countries, in none has it fallen so low as in France.

The Permeability of the Liver to Methylene Blue: a New Sign of Hepatic Insufficiency.

M. Roch published on July 5th a communication in which he points out a new method of determining hepatic insufficiency. This method is founded on the estimation of the permeability of the liver to methylene blue. In the normal condition the liver is capable of retaining 2 mgm. of this colouring matter. On the other hand, in those subjects in whom the liver is affected this quantity has a colouring power sufficiently great to yield urine of a distinctly green colour. M. Roch therefore advises the following procedure. At 8 A.M. 2 mgm. of methylene blue are administered, and the urine is collected up to 8 P.M., separating it into three glasses, each of which contains the renal secretion of a four-hour period. If the urine of the second period—namely, that between midday and 4 P.M.—is clearly greenish in colour it shows that the liver is incapable of completely arresting the methylene blue. If, on the other hand, its colour is yellow or yellowish—in the absence of any pathological condition of the kidneys—the hepatic filter is working normally. This test has given results agreeing with those furnished by testing the alimentary glycosuria; but it is not infallible,

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

The Treatment of Gall-stones.

AT a recent meeting of the Berlin Medical Society Professor Kehr read a paper on the indications for the medical and surgical treatment of gall-stones. He said that according to the researches of Professor Aschoff the formation of gall-stones depended on congestion in the gall-bladder and cholecystitis. Congestion without inflammation produced calculi of cholesterin which were absolutely innocuous. Gall-stones might be left undisturbed so long as no symptoms of infection were present, and if cholecystitis by infection has developed the principal aim should not be to remove the stones but to overcome the infection. Gall-stones held only a secondary position in the sequence of events, being not the cause but a product of the disease. Cholecystitis might terminate in recovery without the removal of the gall-stones. Professor Kehr considered that an operation might be avoided in 80 per cent. of cases of cholecystitis, because in the great majority of instances the infection might be overcome, with the result that the disease becomes latent. The question whether a case would come into this stage of latency was sometimes rather difficult to answer and great experience was required for the formation of a reliable opinion. When the region of the gall-bladder continued to be painful between the attacks, when the temperature was rising, and when the patient's appetite, digestion, and general condition were unfavourable, little hope existed that a state of latency would develop; when, on the other hand, the pains were lessened by the administration of castor oil a stage of latency might follow a visit to Carlsbad. It depended on the mode, the degree, and the duration of the infection and its influence on the liver and the patient's general state whether surgical interference was indicated. Internal treatment was indicated (1) in acute cholecystitis and cholangitis with the exception of gangrenous, perforating, seropurulent, and septic forms; and (2) in chronic cholecystitis showing a tendency to recovery, as well as in dropsy, obliteration, cicatrisation, and calcification of the gall-bladder, but not in chronic empyema and chronic cholangitis, nor in the so-called chronic obstruction of the bile duct. Operation was absolutely indicated in cholecystitis acutissima, in chronic cholangitis, in acute septic cholangitis, in perforation of the gall-bladder and the bile-duct, and in cancer; the question of operation was one for consideration in cases where the patient's health was continuously affected and he was unable to work. Professor Kehr laid special stress on the word "continuously." He said that these indications were rather difficult to recognise. Palpation was not always reliable. In chronic cholangitis, for instance, no tumour was palpable, and an operation was nevertheless indicated; in dropsy of the gall-bladder a considerable tumour may be present, but an operation was contra-indicated. Pyrexia was absent in 50 per cent. of cases of empyema, and icterus also in 30 per cent. of cases of gall-stones in the ductus choledochus. The clinical history was of the greatest importance. In reporting the results of his operations Professor Kehr said that up to the present time he had performed 1866 operations on the gall-bladder and the bile-ducts. 1229 were uncomplicated cases, with a mortality of 3 per cent.; in 307 of these cases cystotomy, cystendysis, and cysticotomia were performed, with a mortality of 2·3 per cent.; 455 were cases of cystectomy, with a mortality of 3 per cent.; and 467 were cases of choledochotomy and drainage of the hepatic duct, with a mortality of 3·4 per cent. In 637 cases complications existed, the mortality being 14·1 per cent. In 290 cases malignant complications were present—namely, cancer, biliary cirrhosis, and septic diffuse cholangitis, the mortality being here 78·6 per cent., so that the total mortality in cases with complications was 43·5 per cent.

An Inquiry into Pharmaceutical Advertisements.

The Congress of Internal Medicine elected a committee, consisting of Professor Heubner (Göttingen), Professor Penzoldt (Erlangen), Professor Gottlieb (Heidelberg), Professor Klemperer (Berlin), and Professor Schmidt (Halle), for the purpose of inquiring into errors, misleading statements, or exaggerations in advertisements of remedies appearing in the medical press. They were directed to draw up a list of such advertisements as were irreproachable. The committee required (1) that the chemical constitution of the compound should not be concealed; (2) that no erroneous statements should be contained in the advertisement as to the origin, production, or identity of the compound; (3) that different tests of a compound purchased at various times and from various pharmaceutical chemists should show no difference in quality or quantity; (4) that the mixtures advertised should not be old compounds already known under another name without having a different action; (5) that no misleading or erroneous statements should be made as to the therapeutic action or the safety of any remedy; and (6) that the sale of the compound should not be incompatible with the interests of the patients. More than 1000 advertisements were examined by the committee, the result being that it was decided to publish three lists—namely, a list containing those compounds of which the advertisements were in accordance with the above principles, a second list containing advertisements where this was not the case, and a third list where the question could not be decided without a more detailed examination. The three lists were called the positive, the negative, and the doubtful lists. The committee in publishing the three lists wished to state that they were neither prepared nor charged to give any opinion on the value of the respective compounds, but only on the mode of advertising them. Notwithstanding this declaration, the three lists were rather severely criticised. The Association of Chemical Works published a statement in the medical and other periodicals declaring that the list of the Congress contained a great many arbitrary statements and fortuitous results. They specially opposed the doubtful and negative list, and drew attention to the fact that the committee had declined to inform the manfacturers what points in an advertisement were, according to their opinion, blameable. They said that the medical profession will have the impression that the committee gave their opinion, not on the advertisement but on the therapeutic action of a compound, and that the proceedings of the committee will thus lead to confusion. This declaration is signed by many of the best-known manufacturers. Some of the leading medical journals are also of opinion that the committee had not acted very cautiously, and that they should have requested the manufacturing chemists to alter some of the contested advertisements before placing the respective products on the negative or doubtful list and thus causing tension both in the medical profession and in the chemical industry.

The Visit of the British Institute of Public Health.

The British Institute of Public Health will meet in Berlin from July 25th to 28th.[1] Arrangements have already been made for a fitting reception by the various authorities concerned and by the medical profession, and the meetings will be held in rooms which have been prepared in the Prussian Herrenhaus. A committee has been formed under the presidency of Professor Flügge, director of the Hygienic Institute, and of Professor Gaffky, director of the Institution for Infectious Diseases. Staff-Surgeon Dr. Niehuss will act as honorary secretary of the committee. A ladies' committee will entertain the ladies of members. The programme includes a reception in the town-hall, a dinner, and a trip to Potsdam by steamer.

July 13th.

[1] THE LANCET, July 13th, 1912, p. 100.

THE UNIVERSITY OF LIVERPOOL: APPOINTMENT OF PROFESSOR OF BACTERIOLOGY.—As a sequel to the appointment by the city council of Dr. James Martin Beattie as city bacteriologist the council of the University on July 9th elected Dr. Beattie to the new post of professor of bacteriology. As stated in THE LANCET of July 6th, Professor Beattie is the occupant of the chair of pathology at the University of Sheffield and dean of its medical faculty. For five years he has had charge of the bacteriological work of the public health department of that city. He goes to Liverpool with a high reputation, and is well equipped for the important work he will be called upon to perform in connexion with the city and the University. Professor Beattie enters upon his duties in Liverpool in October.

UNITED STATES OF AMERICA.

(FROM OUR OWN CORRESPONDENTS.)

The Responsibility of Medical Men and Midwives in the Reporting of Births.

THE Commissioner of Health, Dr. Ernst J. Lederle, calls attention to the fact that the number of births recorded in New York City during the past five months of 1912 was 56,258, as against 56,082 for the corresponding period of 1911. This rate would indicate a decrease of 1·10 per 1000 of the population, which means that if this low birth-rate is to continue there will be 5690 fewer births recorded during the year 1912 than during 1911. It is not believed that this decline in the statistics is due to natural causes. A comparison of the birth and death indices for the month of May in the borough of Manhattan shows that there were 17 children under three months of age who died during that month and whose births had not been recorded. When it is remembered that one out of every five children dies during the first three months of life, and that this method of ascertaining the number of births not reported necessarily applies only to those that have died, it is evident that the number of births not reported during the month of May must be considerably larger than the 17 referred to. Again, the decline is most marked in the borough of Brooklyn, where the birth-rate has fallen over two points during the first five months of the year, while, on the other hand, the infant death-rate of those under one year of age has remained stationary. If the decline in the rate were dependent upon natural causes, it would be accompanied by a decrease in the number of children dying under one year of age, but we find in the borough of Brooklyn that the number of deaths of such infants in 1912 exceeded those in 1911 by 43. Moreover, the number of marriages reported in 1911 was 48,765, an increase of 2348 over those of 1910. From these figures it would seem that the decline in the birth-rate is due to the fact that medical men and midwives have, in many instances, failed to report births. This is a matter of great importance both to the city and to its future citizens. In addition to the fact that vital statistics are thereby greatly impaired in accuracy, the amount of trouble and expense to which persons are liable in later life on account of this neglect may be very considerable. The Department of Health wishes to make it clear that this state of affairs must not continue, and that negligence will be prosecuted to the fullest extent of the law.

The Standardisation of Disinfectants.

There is practically no standardisation of disinfectants in the United States, and the consequence is that worthless and comparatively worthless products are foisted on the public as possessing satisfactory antiseptic and germicidal properties. A year or so ago some of the more prominent medical journals awoke to the situation, and discussed editorially the need for measures similar to those undertaken in England in the direction of standardising disinfectants. The *Medical Record* of June 24th, 1911, dealt with the matter in an editorial and commended the action of THE LANCET in appointing a Commission to investigate the question. The *Journal of the American Medical Association* also discussed the subject in an editorial on July 15th, 1911, stating that the method suggested in THE LANCET appeared to be superior to previous methods, but that J. F. Anderson and J. B. McClintic, of the U.S. Public Health and Marine Hospital Service, in the course of experiments at the Hygienic Laboratory of the Service, seemed to have devised the best method of all. However, in spite of this movement in favour of standardising disinfectants, no steps have been taken with this object in view, and the matter was almost forgotten when *American Medicine*, in its May issue, published a paper by Mr. Ainslie Walker, and emphasised the necessity for establishing a system of standardising disinfectants.

Meeting of the American Medical Editors' Association at Atlantic City.

The forty-third annual meeting of the American Medical Editors' Association was held in Atlantic City on June 1st and 3rd, under the presidency of Dr. T. L. Stedman, editor of the *Medical Record*. Among the papers of special interest were: Science in Personal Journalism, by Dr. T. D. Crothers, Hartford; Commercialism, by Dr. C. R. Taylor, Philadelphia; Medical Journalism from a Disinterested Standpoint, by Dr. A. Albert Stern, Indianapolis; Independent Medical Journalism and the Task of the Independent Editor To-day, by Dr. W. J. Robinson, New York. The annual banquet of the association was held on the evening of June 3rd, when speeches were made by Dr. Abraham Jacobi (President of the American Medical Association), Dr. Rupert Blue (Surgeon-General, U.S. Public Health and Marine Hospital Service), and others.

Cancer Research.

Professor F. C. Wood has been appointed director of Cancer Research in Columbia University, working under the Croker Special Research Fund. Dr. Wood has a special service for scientific study in St. Luke's Hospital, where he is also director of the laboratories. Up to the present time opportunities for clinical research have been inadequate in the United States. An anonymous "well-known scientist" has given $100,000 (£20,000) to the General Memorial Hospital, New York, as an endowment for the maintenance of 20 beds for cancer patients. These beds have been placed at the disposal of the workers under the Collis P. Huntington Fund of Cornell University.

Rabies in New York State.

The Department of Agriculture of the United States has issued recently a statement showing that in New York State ten towns and one village are now under quarantine for rabies, and that the disease is markedly prevalent in Erie, Genessee, and Queen's Counties.

Report on Medical Education.

The latest report on medical education by Dr. Pritchett and Mr. Abraham Flexner, of the Carnegie Foundation, has not been well received by the members of the medical profession generally, either in the United States or in Canada. It will be remembered that in the first report by the same gentlemen some particularly severe criticisms were made on many medical schools in the United States and on two or three Canadian schools. The present report emphasises what was said in the former one, comparing medical education in Europe (and especially in Great Britain) with that in America as a whole, greatly to the disadvantage of the latter. Among other severe criticisms by the writers of the report concerning medical education in America the following seems to have stung most sharply: "Scandals in medical education exist in America alone. In no foreign country is a medical school to be found whose students do not learn anatomy in the dissecting-room and disease by the study of sick people. It has remained for the United States and Canada to confer annually the degree of Doctor of Medicine upon, and to admit to practice, hundreds who have learned anatomy from quiz-compends and whose acquaintance with disease is derived, not from the study of the sick, but from the study of text-books. These scandalous conditions are less widespread to-day than they were a decade ago, yet they are to be found in almost all sections of the country, even in the most cultivated." Members of the Canadian medical profession say that while such conditions may be present in the United States they do not exist in Canada, that even the worst medical school in Canada is not without facilities for anatomical study, and that there is no Canadian medical course in which the students do not get some bedside work. Medical men in the United States deny the truth of many of the statements made in the report. Some even go further and assert that medical education on the whole is better in America than in any part of Europe. There are, however, some medical men, both in the United States and in Canada, who admit that medical education in many of the schools in the United States and in a few of the schools in Canada is seriously defective. There is no doubt that the medical schools of Toronto and McGill Universities are excellent; and, of course, the bigger schools in the United States are also of a high standard. But in the United States there are far too many schools, and undoubtedly some of them should be abolished. As for the conditions with regard to medical education in Canada, some of the schools lack clinical material. It is impossible in towns of under 100,000 population to obtain sufficient clinical material, and perhaps it would not be going too far

to say that no city with a population of less than 300,000, which is not (as may easily happen in England or Germany) in close touch with other cities, should have a medical school. At any rate, the strictures passed by the writers of the Carnegie Foundation Report have already had the effect of improving matters. Nothing tends so greatly to the abolition of bad conditions as publicity, and it is better for all concerned that the medical education question in the United States should be thoroughly ventilated.

Legislation in Regard to Habit-forming Drugs.

Recently two Bills have been introduced into the House of Representatives of the United States, the provisions of which have been drawn up with the view of restricting or regulating the trade in drugs classed as habit-forming drugs. The first Bill proposes that the question should be regulated by international agreement; the second provides for an internal revenue tax of 5 cents a lb. on opium, chloral, and cannabis indica, and of ¼ cent a lb. on coca leaves. It further stipulates that importers and dealers in these drugs shall be registered with the Commissioners of Internal Revenue, and that importers shall pay a licence fee of $50 and dealers one of $10.

June 27th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

The Yellow Fever Danger.

THE Government of India is taking steps to deal with the possible introduction of yellow fever on the opening of the Panama Canal. Major S. P. James, I.M.S., formerly Sanitary Commissioner with the Government of India, is visiting the haunts of yellow fever in South America, and doubtless no regulations for India will be framed until his return. Although yellow fever is unknown to India, the mosquito that conveys it is very common, so that the introduction of the disease would be a serious thing. The long ocean voyage offers some protection, though infected mosquitoes could live in a ship the whole way. But the chief danger lies in the gradual spread of the disease to India by way of China and the Straits. Arrangements have been made at the Imperial Entomological Laboratory at Pusa to train medical officers from the various ports in the ways of the yellow fever mosquito, which has long been under observation by the Imperial entomologist.

King Edward Memorial Cottage Hospital for Europeans.

The Executive Committee of the Punjab King Edward Memorial scheme has resolved to recommend that a cottage hospital for Europeans, costing 1 lakh of rupees, should be built out of the Government of India grant of 10 lakhs, on a site to be provided by the local Government. Plans were submitted by Mr. Stainton. It was also decided that out of the public subscriptions 5 lakhs should be spent on the acquisition of sites for the erection of the following buildings: (1) Mayo Hospital extensions, kitchens and godowns, Albert Victor Hospital extensions, 6½ lakhs; (2) Nurses' Home in Mayo Hospital compound, 1 lakh; (3) Indian private family wards, 1½ lakhs. At a subsequent meeting it was resolved to inform the Government that the committee further desires to expend the following sums out of the funds at its disposal: (1) Alterations to existing materia medica block, Rs.5000; (2) extensions to anatomical block, Rs.10,000; (3) new cold storage and new post-mortem rooms, Rs.4000; (4) new quarters for six Indian house surgeons and new matron's quarters, Rs.65,000; (5) new quarters for 150 hospital servants, Rs.50,000.

Mysterious Epidemic in Tinnevelly District.

A peculiarly virulent type of fever has broken out in epidemic form at Eruvady, the largest Mahommedan centre in the Tinnevelly district. It is said to last often for only a few hours, but almost always to terminate fatally. Many have died from it for miles round Eruvady, and the Government has deputed a medical officer to investigate the infected localities and to treat patients. The outbreak has been attributed to insanitation and unsatisfactory water-supply.

The St. John Ambulance Association in India.

The extension of ambulance work in Rajputana has been very remarkable during the past year. There are already four flourishing centres in Rajputana, and the latest to be formed is one in His Highness the Maharawal of Jaisalmer's territory. His Highness has just contributed 100 rupees to the central fund of the association. Surgeon-General A. T. Sloggett, who is a Knight of Grace of the Order of St. John of Jerusalem, has succeeded Surgeon-General Sir Francis Trevor on the executive committee of the Indian branch of the association.

Death of a Medical Woman.

I regret to announce the death at Karachi, after a short illness, of Mrs. Selwyn, B.A., M.B., of Hyderabad, Sind, who had a wide practice among the more notable zamindar families, both in the town and district of Hyderabad.

Cholera in Bombay.

Cholera is at present prevalent in Bombay. Special precautions, including provision of a motor ambulance and the daily inspection of markets, food, milk, and fruit supplies, have been taken.

The Prevention of Rabies.

In connexion with the prevention of rabies in Madras, Major J. W. Cornwall, I.M.S., Director of the Pasteur Institute, Conoor, remarked that dogs in India required far more attention than in temperate climates to fit them for close companionship with man, and in order to restrict the keeping of dogs to those who could afford to keep them he suggested to Surgeon-General W. B. Bannerman, I.M.S., President of the Central Committee of the Institute, the enhancing of licence fees for dogs and the destruction of stray dogs in municipalities. The Government of Madras has promised to consider the question of amending the Madras City and District Municipalities Acts, and all municipalities will be advised to notify destruction of stray dogs throughout the year.

The Health of Aden.

A member of the staff of the Missions Hospital at Sheikh Othman, near Aden, writes to the lay press of the great improvement in the health of the town, following on the destruction of the breeding places of the anopheles mosquitoes. Cases of malarial fever, formerly very prevalent there, still come to hospital from the hinterland, but such cases are now rare in Sheikh Othman itself. Recently one of the hospital staff developed malaria after a period of immunity, and a hitherto undetected anopheles' breeding ground was discovered in the stables. The improvement in the health of the town is now being maintained at the cost of a few cases of kerosene oil and a salary of 20 rupees a month to a native inspector.

A Bengal Sanatorium.

His Excellency the Governor of Bengal a few days ago laid the foundation-stone of the Edward the Seventh House, Lewis Jubilee Sanatorium at Darjeeling.

The Lady Grover Hospital Fund for Officers' Families.

AT a recent meeting of the committee of the Officers' Family Hospital Fund it was decided to alter the name of the fund to the "Lady Grover Hospital Fund for Officers' Families" in memory of the late Lady Grover. General Sir M. Grover was elected president. Over 1000 officers have intimated their intention of joining the fund. Two beds are actually reserved for the families of subscribers to the fund in the Florence Nightingale Hospital for Gentlewomen, Lisson-grove, London, and it is hoped to increase the number before the end of the year if sufficient regular subscriptions are received. It is also proposed to reserve beds in hospitals in Edinburgh, Dublin, and other large towns. The fund secures medical and surgical treatment in England for the wives, unmarried daughters, mothers, and unmarried sisters of officers who cannot afford the expenses of private treatment or of a nursing home. The weekly charges in the Florence Nightingale Hospital to subscribers is £2 10*s.* for a separate room and £1 5*s.* for a cubicle, this charge including operations, medical attendance, board, nursing, dressings, and medicines, the only extra charge being £1 1*s.* in operation cases to cover the fee of the anæsthetist and the cost of special electrical or massage treatment. Subscribers to the Fund may be officers of the British service serving in India or on the active list of the Indian army, including those on the supernumerary list, and officers of the Indian Medical Service and of the Indian army departments. The benefits

of the fund continue when an officer retires, goes on half-pay or leaves India (provided he continues his subscription), and for one year after his death. The subscription is Rs. 10, or 13*s.* 4*d.*, per annum, which may be paid to the Alliance Bank in India or to Grindlay and Co. at home. Further information can be obtained on application to the honorary secretary, London Committee, Mrs. Strachey, 21, Neville-street, Onslow-gardens, S.W., or in India from the honorary secretary, Lieutenant-Colonel B. Seton, secretary to the Director-General, Indian Medical Service, Simla.

A Banana-meal Industry.

Banana meal is regarded in many countries, and especially in Germany, as a nutritious breakfast food, and is in fairly steady demand in those parts of the world where bananas do not grow and are therefore more costly than in India. Although the surplus crop of bananas in India would allow of a plentiful supply for conversion into banana meal, no great progress seems to have been made with this new industry. The trouble appears to be to dry the bananas adequately, particularly in the monsoon; but a similar difficulty is experienced in parts of Africa, and is there overcome by a cheap and efficient drying and a pulverising apparatus.

June 26th.

STATISTICS OF LAMBETH INFIRMARY.—The medical superintendent of Lambeth Infirmary (Dr. E. Baily) has prepared medical statistics relating to the cases dealt with in the infirmary during the year ending March 31st. The total number of cases dealt with was 4193, of whom 716 died, 2297 were discharged relieved, 589 were discharged unrelieved, and 591 remained in the institution. The patients classified showed: Cases of infective diseases, 447; intoxications, 110; general diseases, 146; tumours, 152; diseases of nervous system, 512; diseases of the eye, 40; diseases of the ear, 33; diseases of the nose, 6; diseases of naso-pharynx, 3; diseases of circulatory system, 360; diseases of respiratory system, 682; diseases of the digestive system, 176; diseases of lymphatic system, 10; diseases of urinary system, 90; diseases of generative system, 98; diseases of organs of locomotion, 53; diseases of connective tissue, 72; diseases of skin, 135; injuries, 148; deformities, 3; effects of poison, 10; parasites, 4; unclassified diseases, 178; nursing mothers, infants, and returns from convalescent homes, 126; and malingering, 6. Of the patients remaining, 3 had been in the infirmary over five years, 6 over six years, 4 over seven years, 3 over eight years, 4 over nine years, 3 over ten years, 1 over 13 years, and 1 over 15 years. The cases admitted on more than one occasion suffering from the same disease numbered 136. The operations amounted to 274, 6 patients dying. When the return was presented to the Lambeth board of guardians last week the chairman, Mr. Frank Briant, L.C.C., said the figures relating to the number of operations performed and the admission of patients suffering from injuries proved conclusively that the infirmary was doing identically the same work as a general hospital. He suggested that copies of the return should be forwarded to the members of the London County Council and others interested in the effect the National Insurance Act will have upon infirmaries and hospitals.

METROPOLITAN HOSPITAL.—The festival dinner of the Metropolitan Hospital was held on July 8th under the presidency of the Hon. Reginald Allwyn Fellowes in the Whitehall Rooms of the Hôtel Métropole. Referring to some of the replies which had been received in answer to the appeal on behalf of the hospital, advocates of woman suffrage, he said, wrote that they could not support hospitals while voteless women were so heavily taxed, and another correspondent wrote that he could not respond to the appeal owing to Lloyd George finance. The medical profession, he pointed out, was entirely master of the situation with regard to the Insurance Act, for the Chancellor of the Exchequer could not create 10,000 doctors in the space of a day or a week. The secretary announced subscriptions amounting to £8982 7*s.*, which was increased to £9000 by the chairman. Mr. Leopold de Rothschild hoped some means would be found of working the Insurance Act with the coöperation and good-will of the medical profession.

THE NATIONAL INSURANCE ACT.

SIR WILLIAM PLENDER'S REPORT ON MEDICAL REMUNERATION IN CERTAIN SELECTED AREAS.

THE following is the full text of Sir William Plender's report on medical remuneration in certain selected areas, to which, owing to the lateness of its issue, we were only able to make allusion last week. It is addressed to:—

The Right Hon. the Chancellor of the Exchequer.

SIR,—In conformity with instructions embodied in the Memorandum of the 12th June, 1912, I have, with the concurrence of the British Medical Association, examined the books for the two years ended 31st December, 1910, and 31st December, 1911, of medical practitioners in Cardiff, Darlington, Darwen, Dundee, Norwich, and St. Albans, and I have obtained information from the superintendents in charge of hospitals, infirmaries, and dispensaries serving those towns as to the patients who have received treatment in the like period.

The number of medical practitioners in the six selected areas is 265. Of this number 51 refused access to their records, of whom 40 reside in Cardiff. The large proportion of refusals in Cardiff out of a total of 96 practitioners in that city renders it impossible for me to submit the information obtained as in any way indicative of the medical experience in that city. The results shown in the subjoined tables are therefore confined to Darlington, Darwen, Dundee, Norwich, and St. Albans. In the 11 remaining instances where all information was refused I have made estimates of the income and visits based upon the experience of other practitioners with due regard to the character and extent of the several practices.

The figures of population have been supplied by the local registrars of births and deaths and the town clerks, and have been adjusted to correspond with districts adjoining or contiguous to municipal areas which are regarded by the doctors as being within their acknowledged sphere of service.

Gross Remuneration from Residents inside *the Towns.*

	1910. Population, 404,184. Number of practitioners, 167.		1911. Population, 408,580. Number of practitioners, 171.	
	Number of visits and attendances.	Amount.	Number of visits and attendances.	Amount.
(A) Visits at patients' houses and attendances at doctors' surgeries, including medicines supplied except in the case of Dundee	539,616	£80,766	537,185	£82,432
(B) Operations and other services (including maternity) for which special fees are charged ...		17,395		17,746
		98,161		100,178
Less—Bad debts		6,972		6,824
		91,189		93,354
(C) Certificates and reports ...		2,831		2,892
(D) Public and other medical appointments ... ... (Medical officers of health, district medical officers, part-time hospital appointments, &c.)		8,154		8,269
(E) Fees for attending coroners' inquests, &c.		375		494
(F) Other items of medical service		197		413
		102,746		105,417
(G) Patients attended under contract in respect of a capitation fee		8,154		8,491
Number of persons (including juveniles) ...	1910: 41,576		1911: 43,763	
Rate per capita	3*s.* 11*d.*		3*s.* 11*d.*	
Gross income from residents *inside* the towns		£110,900 (per head of total population 5*s.* 6*d.*)		£113,908 (per head of total population 5*s.* 7*d.*)

The average annual gross income derived from (A) visits at patients' houses and attendances at surgeries, less a proportionate deduction for bad debts, is 4s. 2d. per head of the population after deducting therefrom the number of persons attended under contract. Adding to such income the income (G) derived from patients attended under contract the average is 4s. 1½d. per head of the total population. The fact that the practitioners' income in Dundee does not include medicines, as hereinafter referred to, should not be neglected in considering these averages.

Gross Remuneration from Residents outside *the Towns.*

—	1910. Number of visits and attendances.	1910. Amount.	1911. Number of visits and attendances.	1911. Amount.
(A) Visits at patients' houses and attendances at doctors' surgeries, including medicines supplied except in the case of Dundee	26,749	£11,830	25,278	£11,853
(B) Operations and other services (including maternity) for which special fees are charged		8,087		9,573
		19,917		21,426
Less—Bad debts... ...		350		304
		19,567		21,122
(C) Certificates and reports ...		534		441
(D) Public and other medical appointments		405		431
(E) Fees for attending coroners' inquests, &c.		40		41
(F) Other items of medical service		1		1
		20,547		22,036
(G) Patients attended under contract in respect of a capitation fee...		243		257
Number of persons (including juveniles): ... 1910: 1,371; 1911: 1,448				
Rate per capita 3s. 6½d. 3s. 6½d.				
Gross income from residents *outside* the towns		£20,790		£22,293

Summary of Gross Income and Deductions therefrom to Arrive at Net Income.

	1910	1911
Gross income from residents inside the towns ...	£110,900	£113,908
,, ,, ,, ,, outside the towns...	20,790	22,293
	£131,690	£136,201
	1910.	1911.
Deduct: Cost of drugs and other materials supplied to patients	£6,989	£7,263
Salaries of Assistants— 1910: Number qualified ... 10; Number of dispensers, nurses, &c. 32	1,734	1,846
1911: Number qualified 13; Number of dispensers, nurses, &c. 31	1,813	1,719
Cost of collection of accounts ...	1,443	1,458
	11,979	12,286
Net income before charging rent, rates, and taxes and expenses of carriage or motor	£119,711	£123,915

The above income does not include fees received by non-resident doctors for attending patients inside the selected areas.

The income of the Dundee practitioners is exclusive of medicines, as in that town it is not the custom for the doctors to dispense their own prescriptions. The population of Dundee is 164,937, as compared with the aggregate population of the five towns of 406,382, or 40·58 per cent. thereof.

Included in the figures relating to "Operations and other Services for which Special Fees are charged" inside and outside the towns, are amounts of £5436 in 1910, and £5345 in 1911 in respect of midwifery fees, representing 4301 and 4262 confinements respectively.

Owing to the want of detailed information in many of the practitioners' records, and to the custom obtaining in most of the towns to charge an inclusive fee, it has been impossible to separate charges for medicine supplied from income derived from visits to patients' houses and attendances at the surgeries, or to arrive at the number of patients treated.

The following tables summarise the information obtained in regard to hospitals and other charitable institutions and Poor-law infirmaries serving the five towns mentioned:—

—	Residents inside the town. 1910.	Residents inside the town. 1911.	Residents outside the town. 1910.	Residents outside the town. 1911.
Number of admissions, in-patients	15,534	16,204	2,810	2,910
Number of out-patients attended	55,463	54,946	3,619	3,550
	70,997	71,150	6,429	6,460

	1910.	1911.
Cost of drugs and other materials supplied to patients	£6,438	£7,004
Salaries paid to medical men:—		
Whole time	2,092	2,279
Part time (included in gross income), see above ...	2,733	2,775
Salaries paid to dispensers and other assistants	1,203	1,225

I have the honour to be, Sir, your obedient servant,
WILLIAM PLENDER.
5, London Wall Buildings, London, E.C., July 12th, 1912.

Sir William Plender's Report and the State Sickness Insurance Committee of the British Medical Association.

The State Sickness Insurance Committee of the British Medical Association considers it desirable to draw attention to some of the fallacies which, if not inherent in the Report itself, have been founded upon certain passages by some of the supporters of the Government, including Mr. Lloyd George himself.

The following criticisms are the result of an examination of the Report by a Subcommittee of the State Sickness Insurance Committee:—

The report states that 4s. 2d. is paid per head of the population in the five towns for ordinary attendances—that is to say, visits at patients' houses and attendances at doctors' surgeries, including medicines (with the exception of the case of Dundee). Much has been made of this figure, which is supposed to prove that the 6s. originally offered by the Chancellor was, as a matter of fact, satisfactory remuneration. The average rate of 4s. 2d. is arrived at by dividing the total income derived from visits at patients' houses and attendance at doctors' surgeries among the whole population, with the exception of those attended under contract on a capitation fee. The total income is the result of payments in respect of a number of attendances. This number of attendances if divided, like the income, amongst the whole population works out when the persons attended under contract and at charitable institutions are deducted at an average of 1·8 attendances per head of the population. To anyone who has given the least study to this question the mention of such a number of attendances is sufficient to show that these attendances have not been evenly distributed throughout the whole population. It is known that the lowest estimate that anyone has ventured to give of the number of attendances per annum on contract patients is four, and it may fairly be assumed that the well-to-do population, to whom the cost of medical attendance is no special consideration, get at least as much attendance as this. Therefore, taking the whole of the population of these towns, it is evident that a large number of persons are either not attended at all or are very much under-attended.

Some of those who have dealt with the report, including the Chancellor himself, have assumed that the whole population resident inside the towns are private patients, with the exception only of those attended in contract practice, whereas many of them are attended upon a charitable or semi-charitable basis. The report itself shows that in round numbers 71,000 were attended at hospitals or other institutions during each of the two years under review. In addition many persons in every town and in every district receive the private charity of doctors, many are attended at a sum which cannot be called remunerative, and a great number who need attendance never get it. The latter fact has been made use of by the Chancellor of the Exchequer on many occasions, and is indeed one of the main arguments for the institution of medical benefits by the Act. But it is one of the few certainties of the situation that under the Act the amount of medical attendance will rise considerably. Many people will receive attendance which they have never had before, and though it may be said that this will be paid for, it must not be forgotten that universal experience shows that under any form of contract the tendency is to take advantage of the unlimited service provided. In addition to this the salutary principle of free choice of doctor pressed for by the British Medical Association and adopted by the Government will undoubtedly have the effect of increasing the total amount of attendances.

Another point which has not received much consideration, but which is bound to increase the amount of attendance, is the fact that sickness benefit only commences on the fourth day of illness, and therefore in order to be sure of being in a position to claim the benefit as soon as it is due, the tendency will be for insured persons to seek the assistance of a doctor at an early stage of any illness. This is a desirable result, but it will certainly lead to medical advice being sought even in many trivial complaints for which at present it is rarely asked. The fact that increased medical attendance will certainly be required under the Act

need not be laboured, because it was acknowledged in the most unreserved fashion in the letter from the Commissioners of June 26th, 1912. In that letter the following admission was made: "The Government have always recognised that the average medical remuneration per head of the insured population on account of medical benefit under the Act should not only not be less than that received per head under existing conditions, but should equitably be greater in view of the greater demands that are likely to be made upon the work of the profession under the Act than had hitherto been usual."[1] It might, indeed, be said that if the Government could guarantee that only an average of 1·8 attendances would be required by an insured person annually, then there might be something to be said for an acceptance by the profession of the 6s. which had been offered as medical remuneration under the Act.

A point which was referred to by the Chancellor of the Exchequer in his speech at Kennington (July 13th) is the fact that in Dundee medicines are not supplied by the doctor, and this was assumed to be a point in the actuary's report which was in favour of the profession. It must, however, be noted that if the medicines were supplied by the doctors in Dundee, the fees charged in that town would certainly be higher. Reference may be made to the untenable argument advanced by the supporters of the Government to the effect that, whereas 4s. 2d. appears to be the correct amount of medical remuneration per head per annum, the profession in asking for 8s. 6d. is demanding to have its income doubled. As has been already shown, this is pure fallacy, but, if this kind of argument may be allowed on one side, it would be perfectly fair to point out on the other that whereas the amount per attendance obtained by taking the population inside and outside the five towns amounts to 5s. 9d., the Association has only asked for a sum, namely, 8s. 6d., which if divided, as experience teaches us it would probably be necessary to divide it into payment for five[2] attendances (two visits and three consultations at the surgery), would only produce 1s. 8½d. per attendance.

It is a curious fact that up to now the Chancellor of the Exchequer, the Commissioners, and the supporters of the Government generally have entirely ignored the calculation put forward by the Association in its memorandum placed before the Chancellor on June 12th last.[3] Nothing the Association can say seems to dispel the delusion into which the Chancellor and his advisers appear to have fallen—namely, that any increase in medical remuneration given as regards insured persons will apply to the uninsured. The only effect it could be imagined to have would be in respect of its application to 12 million insured persons, while, as shown in the memorandum above referred to, the uninsured may be divided into two parts; about half would be private patients, from whom it may be assumed that proper fees would be obtained. The rest would consist of (*a*) those who are and will remain objects of charity; (*b*) those uninsured persons who would still be attended through some form of contract practice, and who, not being subsidised by the State and by their employers, might still claim some measure of charitable treatment at the hands of the profession.

We would refer those who are desirous of showing not merely that the Government is actuated by a benevolent desire to increase the income of the medical profession, but of getting at the truth in regard to this matter, to the Memorandum above mentioned, which has received very little attention at the hands of the Chancellor, and, so far as this argument is concerned, has never been challenged.

Taking Sir William Plender's Report as it stands, it will be seen that the figures have little bearing upon the situation which will arise after Jan. 15th, 1913, and that the inferences to be derived from it do not in any way weaken the claim of the Association for medical remuneration under the Act of 8s. 6d. per head, exclusive of extras. The public and the Government must not be allowed to forget the fact put prominently forward by the Association but conveniently ignored by the Chancellor and the Commissioners, that when the Government supplies medical attendance on its postal and other civil servants it pays for carefully selected lives an annual capitation fee of 8s. 6d., which includes the provision of medicines.

The elaborate and costly inquiry of the Government cannot obscure this very relevant fact, and in no way affects the claim made by the Association—that for lives which are not selected, and for a service in which at least as careful attention will be required, 8s. 6d., without medicines, is not an unreasonable fee to ask.

MEMORANDUM ON THE ADMINISTRATION OF SANATORIUM BENEFIT.

The National Health Insurance Commissioners (England), having conferred with the Local Government Board on general questions affecting the administration of sanatorium benefit, have issued the following memorandum for the guidance of Insurance Committees in commencing the administration of the benefit:—

1. "Sanatorium benefit" consists of treatment given at the cost of the National Health Insurance Fund to persons suffering from tuberculosis (the chief form of which disease is consumption) or such other diseases as the Local Government Board, with the approval of the Treasury, may appoint (Section 8 (1) of the Act). For the time being the benefit is confined to the treatment of tuberculosis.

2. The first duty of an Insurance Committee with respect to sanatorium benefit is to make provision for the treatment of cases of tuberculosis occurring among insured persons, for the administration of whose benefit they are responsible. They may, if they think fit, extend treatment to the dependants of insured persons or to any class of such dependants, but during the initial period it will be desirable to confine the benefit to insured persons until the financial liabilities of the committee can be more accurately estimated.

3. The committee are not under statutory obligation to provide sanatorium benefit for every insured person suffering from tuberculosis who applies to them; they have a discretion in the matter. An insured person is not entitled to the benefit unless recommended for it by the committee in accordance with Section 16 (3) of the Act.

4. Treatment for purposes of sanatorium benefit may be given: (*a*) in sanatoria, hospitals, or other residential institutions; (*b*) at tuberculosis dispensaries (as defined in paragraph 15), or other non-residential institutions, or in the patient's home. (Further reference to the various kinds of treatment which it may be the duty of the committee to arrange for patients to receive will be found in paragraphs 14 to 18.)

5. In administering the benefit Insurance Committees are not empowered by the Act themselves to provide institutions. Their duty is to make arrangements with suitable persons or local authorities for this purpose. All such arrangements are required by the Act to be made to the satisfaction of the Commissioners. In the case of those who require treatment in institutions the arrangements must be made with persons or local authorities (other than Poor-law authorities) having the management of sanatoria or other institutions approved by the Local Government Board. Where treatment is required otherwise than in institutions, arrangements must be made for it to be given by persons or local authorities (other than Poor-law authorities) undertaking such treatment in a manner approved by the Local Government Board.

6. Thus the matters which will require the attention of the Insurance Committee in the administration of sanatorium benefit will be the following:—(*a*) To make arrangements for the medical examination of insured persons applying for sanatorium benefit, and for obtaining expert advice in order that the committee may be satisfied that such persons are in fact suffering from tuberculosis and, if so, may decide as to the kind of treatment most suitable in each case; (*b*) to decide which if any of such persons should not be recommended for sanatorium benefit; (*c*) to make suitable arrangements with a view to proper treatment being provided in each case, in appropriate institutions or in the patients' homes; (*d*) to submit the arrangements proposed to be made to the Insurance Commissioners for their approval.

THE TREATMENT OF TUBERCULOSIS.

7. In order to indicate clearly the kinds of arrangements which it will be open to an Insurance Committee to make for the administration of sanatorium benefit in the case of insured persons, it is necessary to refer to the provision which has already been made, or is likely to be made, by local authorities for the prevention and treatment of tuberculosis in the general population.

The disease has special features which, as they have become more generally known, have increasingly directed public attention to it. It is spread by infection, widely prevalent, and causes great loss of life, and, as it especially attacks young adults in the most active period of working life, it inflicts serious injury upon the community. The disease is now, however, known to be not only preventable, but eminently curable in a large number of cases with timely and appropriate treatment. In view of these facts it has now become generally recognised that the prevention of tuberculosis, as of other infectious diseases, is a duty devolving upon local authorities, and in recent years many of these authorities have, to an increasing extent, been engaged in the actual treatment of tuberculous persons. By successive orders of the Local Government Board, the last of which came into operation on January 1st last, tuberculosis of the lungs has been made a compulsorily notifiable disease. Thus, every case in which pulmonary tuberculosis (consumption of the lungs) is diagnosed must be notified to the medical officer of health of the borough, or urban or rural district.

8. Notwithstanding what has already been effected by local authorities and voluntary effort, the available means of organised expert treatment in the form of sanatoria, hospital accommodation or dispensaries are, however, at present far short of the needs of the population. In these circumstances Parliament provided under the Finance Act, 1911, a capital sum of £1,500,000 for the United Kingdom to aid the provision of institutions for the purpose. The amount available for England from this sum will be about £1,116,000, which will be distributed in accordance with Section 64 of the Act by the Local Government Board subject to the consent of the Treasury given after consultation with the Insurance Commissioners. Having regard to the capital sum thus provided, and in view of the early operation of the Insurance Act, it became advisable to consider the whole question of tuberculosis in all its bearings, and the Government accordingly appointed, in February last, a Departmental Committee "to report at an early date upon the considerations of general policy in respect of the problem of tuberculosis in the United Kingdom, in its preventive, curative, and other aspects, which should guide the Government and local bodies in making or aiding provision for the treatment of tuberculosis in sanatoria or other institutions or otherwise."

9. In view of the fact that the provisions of the Insurance Act relating to sanatorium benefit come into operation on July 15th, 1912, the Committee issued an Interim Report in which they laid down, for the assistance of all concerned in the administration of measures dealing with tuberculosis, whether among the insured or non-insured sections of the population, the broad lines of the scheme which they recommended for adoption in every area, and the recommendations of the Committee are concurred in, generally, by the Local Government Board and the Insurance Commissioners.

10. The Departmental Committee recognised that the provision for dealing with tuberculosis when occurring among insured persons could not satisfactorily be considered as a separate problem. They made it their object "to take into consideration the existing machinery and funds available, and to indicate the lines upon which, in their view, a national and comprehensive scheme for combating tuberculosis in all its forms may be established and developed," and they "endeavoured to devise a scheme in which may be united or correlated the activities of the various bodies, authorities, and persons concerned, so as to ensure that adequate provision for the prevention and treatment of the disease should be made available on a systematic basis, as far as possible uniform in character, but not necessarily identical in detail, throughout the United Kingdom."

11. For the proper development of satisfactory schemes of administration in each area on the lines laid down in the report of the Departmental Committee, which are briefly summarised in paragraphs 14-21 of this memorandum, time is required in order that Insurance Committees, the county and county borough councils, and the other local authorities and bodies concerned may consider the matter and consult together. Time will also be required, obviously, for the erection of buildings and for the organisation of institutions, including sanatoria, hospitals and dispensaries. Although in certain administrative areas an organisation (including adequately trained officers) for this purpose has already been created or is in an advanced stage of preparation, in

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[1] THE LANCET, July 6th, p. 54.

[2] The justification for this figure 5 will be found in the British Medical Journal Supplement for July 6th, p. 30.

[3] Supplement of the British Medical Journal, July 6th, p. 29.

most districts this is not the case. Moreover, there must inevitably be some delay before a sufficient number of medical practitioners possessing the requisite qualifications for the permanent post of tuberculosis officer can be available.

12. It will therefore be necessary in most districts for arrangements of a purely temporary and provisional kind to be made, in order that such forms of treatment as can be given through existing agencies may be made available for the benefit of insured persons at the earliest practicable date after July 15th, and at the outset each Insurance Committee will have to consider two questions: (1) the permanent scheme which is eventually to be brought into operation; and (2) the provisional agreements that must be made in the area of the Insurance Committee for the administration of sanatorium benefit from the commencement of the Act until the permanent scheme can be brought into operation.

13. Although in order of time the provisional scheme must first be dealt with by the Committee, it must be remembered that even the provisional arrangements adopted must be framed with careful regard to the lines of the permanent scheme which is subsequently to take its place, in order that the proper development of the permanent scheme may in no way be prejudiced. For this reason it may be desirable to set out here what should be the more important features of the permanent scheme before considering the provisional arrangements that are more immediately necessary.

MAIN FEATURES OF PERMANENT SCHEME.

14. In the report of the Departmental Committee it is pointed out that a complete scheme for dealing with tuberculosis in any area will fall naturally into two parts, called for convenience the "dispensary unit" and the "sanatorium unit" respectively. The "dispensary unit," which consists of the dispensary (see paragraph 15), acting in coöperation with the private practitioners of the district, deals with patients resident in their own homes, and must provide for the diagnosis of cases suspected to be tuberculous, recommendation as to treatment, and provision of actual treatment for those patients who can be suitably treated in connexion with the dispensary.

The "sanatorium unit" comprises the various classes of institution available for tuberculous persons who need residential treatment.

The Dispensary Unit.

15. The term "dispensary" is used in this connexion in a special sense as a local centre of expert diagnosis and treatment. As is pointed out in the Report of the Departmental Committee, the essential element is not the building but the expert medical officer to be designated the "tuberculosis officer." He should be a person of such experience, attainments, and professional status as are likely to command the confidence of the medical practitioners of the district, on whose effective coöperation the success of the whole scheme must largely depend. To carry out his duties efficiently he must usually give his whole time to the work of the dispensary.

16. When necessary the tuberculosis officer will be assisted at the dispensary by a medical staff, which may include private practitioners giving part of their time to this work, and one or more junior whole-time officers. Arrangements for nursing will also usually be necessary.

17. When the scheme is in full operation persons, whether insured or not, who are suspected to be suffering from tuberculosis should be examined by the tuberculosis officer or officers of the dispensary, who should recommend the kind of treatment most suitable for each. The tuberculosis officer and his assistants could thus act as the medical advisers of the Insurance Committee in carrying out its duty of deciding which insured persons should receive sanatorium benefit and what kind of treatment should be provided for each. In those cases which can best be treated at the dispensary itself the medical staff will give the necessary treatment. Where the case is treated at home under the care of a private practitioner, the tuberculosis officer will act as a consultant, and, with the dispensary staff, will assist the practitioner in such a way as may be necessary.

When patients return home after a period of treatment in a residential institution, prolonged care and medical supervision may frequently be required, and it will be the duty of the dispensary staff to coöperate with the private practitioners in carrying this out. The dispensary staff will also act under the direction of the medical officer of health in carrying out any duties that are necessary for his assistance in administrative and preventive work for the protection of public health, such as the examination of "contacts"—i.e., persons who have been associated with tuberculous persons, and may therefore be themselves infected.

The Sanatorium Unit.

18. Treatment in a residential institution for a longer or shorter period is desirable in a considerable number of cases of tuberculosis. Treatment in a sanatorium is chiefly useful for two purposes: (1) as the first step to the cure of the patient, or at all events to the restoration of his working capacity; and (2) as affording the best opportunity for instructing the patient in the precautions it is necessary he should observe both for his own health and for the safety of his associates. Treatment in a sanatorium is, therefore, most useful for patients in a comparatively early stage of the disease, and the Departmental Committee express the opinion that "a short stay in an institution, followed by a course of home treatment, in shelters, &c., under close medical supervision, is a form of sanatorium treatment which has certain advantages and which may successfully be adopted in a large number of cases." Hospital accommodation is chiefly required: (*a*) in emergencies; (*b*) for cases needing operative treatment; (*c*) for cases of acute disease, in order that the patient may be kept under observation until the kind of treatment required is ascertained; (*d*) advanced cases, who may be dangerous sources of infection if not properly cared for, and for whom proper accommodation cannot be provided at home. The sanatorium unit may comprise also such institutions as farm colonies, open-air schools, &c.

19. When the scheme is in full operation it will be for the Insurance Committee to decide what insured persons are suitable for treatment in sanatoria or hospitals, or in other residential institutions, and to make the necessary arrangements. In this decision it will usually be most satisfactory, as already explained, that they should be guided by the advice of the tuberculosis officer, provided that suitable arrangements for this purpose can be made with the county or county borough council.

Organisation of Local Schemes.

20. It is recommended in the Departmental Committee's Report that the whole scheme should be organised and managed by the county council or county borough council, acting in coöperation, in the case of the county council, with the local sanitary authorities of the area, and in both cases with the Insurance Committee and with charitable and other voluntary organisations concerned in the prevention or treatment of tuberculosis.

21. Insurance Committees will be consulted in the preparation of such schemes, and the Insurance Commissioners will ascertain the views of the Insurance Committee of each area before finally expressing an opinion on proposals involving capital expenditure for provision of institutions for that area. In considering schemes the Insurance Committee will doubtless have regard to the prospective requirements of the insured in relation to the various kinds of treatment. Important indications under this head are given in the report of the Departmental Committee.

22. It is further proposed that in order to promote the necessary coöperation of all the bodies concerned a Consultative Committee should be formed by the county or county borough council in which members of the Insurance Committee nominated by that committee should be included, the county or county borough council agreeing with the Insurance Committee to be advised by the Consultative Committee on questions of administration of the dispensary or dispensaries, and cognate matters. It is proposed that voluntary organisations engaged in this work should also be represented on the committee.

Financial Arrangements.

23. Under the provisions of Section 16 (2) of the Act, each Insurance Committee will have, as its ordinary income for the provision of sanatorium benefit, a sum of 1*s.* 3*d.* per annum on account of each insured person for the administration of whose benefit the committee is responsible. A sum of 1*d.* per insured person per annum is also provided by Parliament, but will be applied by the Commissioners in accordance with the provisions of the Act to purposes of research. Thus, when the Act is in full operation, the Insurance Committee of a county or county borough which included 40,000 insured persons would have at its disposal an annual income of £2500 for provision of sanatorium benefit.

24. The committee may make arrangements for providing treatment of the various kinds required by negotiating with those managing sanatoria or hospitals as occasion arises. Section 64 (4) of the Act empowers the committee to make arrangements in advance for such periods as seem expedient. This will usually be the preferable course, especially in what will doubtless be the ordinary case—namely, where the arrangement is made with the council of the county or county borough to which the Insurance Committee themselves belong, or with a joint body on which that council are represented.

25. The arrangements will differ according to the kind of institution in view. In the case of residential institutions, such as sanatoria or hospitals, the committee may make an arrangement with the county council or other local authority to pay a fixed sum per head, guaranteeing that in any given year the total contribution in this respect shall not fall below a fixed minimum.

26. In the case of a dispensary the contribution made by the Insurance Committee may be considered as falling under two heads—viz., first, the payment for the treatment of insured persons by the dispensary staff, and, secondly, the payment, if any, in consideration of any arrangements made for the tuberculosis officer to act as adviser to the Insurance Committee. The payment under the second head must obviously take the form of a fixed annual payment, and the payment for treatment may also be a fixed annual amount. In fixing the amount paid in consideration of treatment, regard will doubtless be had to the fact that the dispensary will usually provide for the needs, not only of those for whom the committee are responsible, but of the general population.

27. Where arrangements are entered into with general practitioners for the treatment of patients in their own homes, payment will be made to those practitioners on a basis which should be agreed upon, if practicable, with the medical profession of the district, and to this end it will be convenient that the committee should consult the local Medical Committee if any such has been recognised by the Commissioners under Section 62 of the Act.

28. In making arrangements for the treatment of insured persons the Insurance Committee must bear in mind that in the case of residential or dispensary treatment the institution must have been approved by the Local Government Board, and that as regards non-institutional treatment the manner of treatment also requires the approval of that department.

29. These contracts will not necessarily in all cases be made with local authorities. Where, for example, the treatment is undertaken by a private medical practitioner the contract may be made with the practitioner direct. Similarly, as regards institutional treatment, arrangements may in some cases be made with private persons and bodies controlling sanatoria, hospitals, or any other institutions.

30. Assuming, however, the proposals of the Departmental Committee to be generally carried out by local authorities, arrangements for obtaining treatment for insured persons will be made, in the large majority of cases, with county councils, county borough councils, or, possibly, other local authorities. Where an Insurance Committee thus enter into arrangements with a county or county borough council undertaking the organisation of a complete scheme it will probably be found most advantageous in every respect that such arrangements should be embodied in a comprehensive contract in which are specified (i) the payments to be made in respect of treatment in sanatoria, hospitals, or other residential institutions, controlled by the local authority, and (ii) payments in respect of treatment in dispensaries, and (iii) the terms on which the services of the tuberculosis officer shall be placed at the disposal of the Insurance Committee as their expert adviser in regard to the diagnosis and treatment of cases of tuberculosis.

31. All such arrangements must be to the satisfaction of the Insurance Commissioners, who are prepared to advise the Insurance Committees generally in the matter.

32. Among the matters dealt with in such general agreement should also be the question of the formation of a Consultative Committee, the representation of the Insurance Committee thereon, and the definition of the questions on which the committee should advise. On this subject the Departmental Committee recommend "that arrangements should be made whereby, in view of the payments that would be made by Insurance Committees (under agreements for a term of years) towards the expenses incurred in connexion with the dispensary in respect of the committee's patients, the councils might agree to be guided, in matters appertaining to the staffing and internal management of the dispensary, by the advice of a Consultative Committee

consisting of members of the two bodies appointed by the respective parties in some agreed proportion."

ARRANGEMENTS TO BE MADE AT THE COMMENCEMENT OF THE ACT.

33. For the reasons already stated it is evident that in most districts the system of dispensaries, sanatoria, &c., above described will not be available for some time after the commencement of the Act. Where and so far as it is not available it will be necessary for the Insurance Committee to make temporary arrangements at the outset.

34. Moreover, the amount available for purposes of sanatorium benefit during the six months, July 15th, 1912, to Jan. 12th, 1913, will be less than the amount which would be available in a similar period after the Act is in full operation, and for several reasons special financial arrangements will be made for this period. Under these arrangements each committee will as from the commencement of the Act be credited with a sum equivalent to about £4 5s. per 1000 of the total population of its area. The expenditure necessary to provide such treatment as can be given in this period will not be so great per head as when approved schemes are developed by the local authorities, because the accommodation in sanatoria, in which institutions the expense of treatment is greatest, will for some time be limited. It may be possible for the committee to obtain treatment for a small number of cases in sanatoria and hospitals, but the majority of cases must be treated in dispensaries or at home, and it is further to be noted that, except in certain towns where the local authorities have already made considerable provision, dispensaries cannot be expected to be in working order for some time to come.

Provisional Scheme of Selection and Treatment.

35. In making the necessary arrangements for administration at the commencement of the Act, the Insurance Committee should, at an early date, place themselves in communication with the county or county borough council with a view to the medical officer of health attending a meeting of the committee, as provided in Section 60 (2) of the Act, and advising them on the necessary arrangements. The matters which the Insurance Committee must in the first place consider, after taking the advice of the medical officer of health, are the following: (a) the method by which persons applying for sanatorium benefit shall be medically examined and reported on, and recommended for the various kinds of treatment available; (b) the institutions and means of treatment available for patients, and the arrangements which it is desirable should be made with the local authorities or managing bodies for their use. When a provisional scheme of arrangements has been arrived at, the Insurance Committee should submit their proposals to the Commissioners for approval.

36. As regards the first of the above matters, viz., the method of medical examination and report, the Commissioners have consulted the Local Government Board, and are of opinion, the Local Government Board concurring, that the following procedure will enable the committee to deal with the administration of the benefit, so far as it can be dealt with at the outset, in those districts where a tuberculosis officer has not been appointed and the agencies available are very limited. It is suggested, briefly, that in these areas the medical officer of health of the county or county borough might properly, if on the committee's application the council agree to such arrangement, be appointed to act temporarily as the expert adviser of the committee in dealing with individual applications for sanatorium benefit. Where such an arrangement is made, an insured person who believes himself to be suffering from tuberculosis and wishes to obtain sanatorium benefit would apply to the clerk (or acting clerk) of the Insurance Committee. The clerk will furnish him with a blank form of medical report, which the patient will be advised to take to his ordinary medical attendant or any other medical practitioner he may prefer. The practitioner should be asked by the patient to make the necessary examination and fill up the particulars indicated in the form. A fee should be paid by the Insurance Committee for the examination and report, and the Commissioners are advised that a fee of 5s. will be regarded as suitable for this purpose. Reports should be forwarded to the medical officer of health or other medical adviser appointed to assist the committee in this matter. On his advice the committee will select the cases that stand most in need of sanatorium benefit and decide what kind of treatment should be provided in each case.

37. Even where it is decided that a patient should, if possible, be admitted to a sanatorium or hospital, an interval may elapse before admission can be obtained, and it may be necessary to make arrangements for the care of the patient in this interval. Where a dispensary is available a patient may be referred to it for some form of special treatment; in other cases arrangements should be made for the home treatment of the patient by a private practitioner. The general scheme of home treatment will be subject to the approval of the Local Government Board. The arrangements for treatment by private practitioners may be made in various ways; for instance, where this course is found more convenient, the patient may be authorised to obtain from his own medical attendant such treatment as may have been sanctioned in his case by the Insurance Committee to be provided at the cost of the funds of the committee.

38. The Commission fully realise that the duty entrusted under the Act to the Insurance Committees of securing treatment for tuberculous persons necessarily involves the consideration of many important problems, both technical and administrative. They are, however, confident that local authorities and their officers will at all times lend the Insurance Committees such assistance as they are able. The Commission will themselves be ready to advise and assist in any questions of difficulty that may be submitted to them, and they will be glad to learn at an early date of the arrangements contemplated in the area of each committee.

July 6th, 1912.

THE NATIONAL INSURANCE ACT AND THE IMPERIAL MEDICAL REFORM UNION.

Mr. George Brown, the general secretary of the Imperial Medical Reform Union, has sent us a copy of the scheme proposed by the Union for working the Act, the scheme having been provided in accordance with the following resolution:—

That, in accordance with the report of the Council, this meeting is of opinion that no scheme of "medical benefits" under the National Insurance Act will be satisfactory which does not provide for the payment of medical practitioners for actual services rendered, and that the Council be authorised to prepare and submit a scheme to the Commissioners based on this principle.

The scheme, after disposing by the usual phrases of the *per capita* system of payment and of the payment by salary through associations of Friendly Societies, advocates payment for actual service rendered under an agreed scale of fees, the model of the National Deposit Friendly Society having been taken. The objection that this system is likely to encourage malingering and to induce medical officers to give unnecessary attendance and medicines is disposed of by quoting previous experience, as well as on the grounds of improbability. The secretary of the National Deposit Friendly Society has stated, it appears, that only one case has occurred for many years past where he has had occasion to suspect malingering on the part of the patient or laxity on the part of a medical man in his duty to the society. The authors of the scheme point out that failure of principle on the part of medical officers would necessitate conspiring with insured persons, with a risk of being struck off the Medical Register for infamous conduct.

"The scale of fees," says the report, "should be graduated in accordance with the income of the insured persons." The following classes are suggested, the details to be arranged by the local Advisory Committees:—

CLASS A.—To include persons earning 30s. or less in country districts and £2 per week in towns of over 20,000 population:—

	s.	d.
Consultation and medicine (if necessary) at doctor's surgery	1	6
Day visit and medicine if within two miles of surgery ...	2	6
Night visit between 8 P.M. and 8 A.M., including medicine ...	7	6
Repeat mixtures up to 6 or 8 oz. bottles, not including consultations	1	0
Mileage over two miles 1s. per mile outwardly only	1	0

CLASS B.—To include persons earning 30s. and up to 40s. in country districts and 40s. to 50s. in towns:—

	s.	d.
Consultation and medicine (if necessary) at doctor's surgery	2	0
Day visit and medicine if within two miles of surgery ...	3	0
Night visit and medicine between 8 P.M. and 8 A.M.	7	6
Mileage over two miles 1s. per mile. No additional "extra" mileage to be charged when more than one patient is seen in the same village. (This to apply in all classes.)		

CLASS C.—Persons whose income exceeds 40s. in country districts and 50s. up to £160 per annum in towns:—

	s.	d.
Consultation and medicine (if necessary) at surgery	2	6
Day visit and medicine if within two miles of surgery ...	3	6
Night visit and medicine between 8 P.M. and 8 A.M.	10	6
Mileage over two miles 1s. per mile.		

The scheme provides for extra fees to be payable for certain special services and operations, major and minor, and fees are to be paid by the patient or the district secretary at the end of the illness.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the quarterly examination in Practical Pharmacy held on July 5th and 6th the following candidates were approved:—

Adolfo Arias, St. Bartholomew's Hospital; Edwin Randolph Bailey, L.D.S. Eng., Guy's Hospital; Thomas Burton Bailey, Municipal College, Portsmouth; Henry Searle Baker, St. Bartholomew's Hospital; Percy Banbury, St. Thomas's Hospital and private study; Percy Lytton Tempest Bennett, London Hospital; George Henry Kelsey Burge, Westminster Hospital; Arthur Thomas Dally, Middlesex Hospital; William Robinson Dickinson, St. Bartholomew's Hospital; David MacMurray Dickson, Herbert Mervyn Drake, and Gerald Gordon Drummond, St. Thomas's Hospital; Eric Alfred Charles Fazan, Middlesex Hospital; Cassidy de Wet Gibb, Guy's Hospital; Cyril Gould, University College; Arthur Griffith-Williams, London Hospital; Alan Basil Hacking and Owen Hairsine, Middlesex Hospital; William Llewellyn Aplin Harrison, St. Mary's Hospital; Harold Reginald Wessen Husbands, Bristol University; Theodor Julius Juta Jeppe, Cambridge University and St. Thomas's Hospital; Clement Carlyon Kerby, B.A. Cantab., Cambridge University and St. George's Hospital; Paul Rustat Ellis Kirby, University College; Allan Osborne Knight, Middlesex Hospital; John Iles Francis Knight, London Hospital; Roy Dyson Langdale-Kelham, University College; John Llewellyn David Lewis, Guy's Hospital; Samuel Durham Lodge, Leeds University; Jose Miguel Madariaga, St. Thomas's Hospital; John Morrice Maitland Marshall, St. Bartholomew's Hospital; George Selvanayagam Mather, Ceylon Medical College and

University College; Horace Mather, Guy's Hospital; Gordon Millar, St. Bartholomew's Hospital; Francis Henry Mosse, M.A. Oxon., King's College Hospital; George Marshall Oakden, L.D.S. Eng., Middlesex Hospital; Percy Edward Hughes Patey, Guy's Hospital; John Frederick Munton Payne, London Hospital; Haydu Peters, Middlesex Hospital; Frederick Porter-Smith, St. Thomas's Hospital; Douglas Sherrin Pracy, St. Bartholomew's Hospital; Sydney Jessie Scott Reid, Royal Free Hospital; Trefor Hughes Rhys, University College, Cardiff; Stanley Alfred Riddett, L.D.S. Eng., Leeds University, Middlesex Hospital and private study; George Cuthbert Robinson, St. Thomas's Hospital; Gerald Robinson, Manchester University; Arthur Burch Rosher, Charing Cross Hospital; John Rowland, St. Thomas's Hospital; Percy Gunn Russell, Middlesex Hospital; William Henry Sarra, London Hospital; Ronald James Scarr, Manchester University; William Walford Salisbury Sharpe, St. Mary's Hospital; John Weston Stretton, B.A. Cantab., St. Bartholomew's Hospital; John Bevil Grenville Skelton, London Hospital; Charles Montague Slaughter, St. Thomas's Hospital; Denys Munro Smith, Bristol University; Peter de Safforie Smith, Birmingham University; Mackenzie Thwaites Wills Steedman, B.A. Cantab., St. Bartholomew's Hospital; Owen William Dyne Steel, London Hospital; Harman Taylor and Ernest Wayte Terry, Manchester University; Frederick Tooth, Guy's Hospital and private study; Thomas Reginald Trounce, L.D.S. Eng., Guy's Hospital; Arthur Alward Watkinson, Charing Cross Hospital; Russell Facey Wilkinson, St. Mary's Hospital; and William Edwin Wilson, St. Bartholomew's Hospital.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a meeting of Council on July 11th diplomas of Membership were conferred upon the following gentlemen who have now complied with the by-laws:—

Bindignavale Gamdachanja Srinivas Acharya, M.B. Madras, Madras University; Edward Wrigley Braithwaite, L.S.A. Lond., Leeds University; Vladimir Gerhard Engels, M.D. Heidel., Heidelberg University; Harold William Hills, Lieutenant, R.A.M.C., University College Hospital; Walter Rowland Southall Roberts, Birmingham University; and Harold Webb, Guy's Hospital.

Licences to practise dentistry were conferred upon the undermentioned gentlemen:—

Lionel Scott Langley, Guy's Hospital; and Reginald Alfred Slade and Grantley Smith, Bristol University.

VICTORIA UNIVERSITY OF MANCHESTER.—The following candidates have been approved for the degree of M.D.:—

*Frances M. Huxley, †Catherine Chisholm, †Harold Coppock, †Gertrude H. Hickling, †William Wilson, Cecil Hibbert, F. H. Lacey, and G. F. Wrigley.

* Awarded Gold Medal. † Commendation.

CENTRAL COMMITTEE OF HEALTH AGENCIES AND AUTHORITIES.—It has been generally felt for a long time that closer coöperation was necessary between all bodies in London dealing with matters of public health, and lately a committee representing the Central Voluntary Health Associations has been considering how this could be most effectively brought about. After consultation with the Local Government Board, a committee representing the Central Voluntary Health Associations summoned a conference at the Mansion House on July 16th to consider the desirability of forming a Central Health Committee for London which would promote joint action between metropolitan municipal authorities and voluntary health agencies in the prevention of disease, and in the education of all classes in matters of health and domestic hygiene. Sir Melvill Beachcroft presided. Sir Robert Morant wrote that after careful consideration Mr. Masterman and he had come to the conclusion that it was impossible for the National Health Insurance Commission to be represented on the proposed committee, much as they appreciated the purpose which it had in view. On the motion of Dr. F. J. Allan (Mansion House Council on Health and Housing), seconded by Sir John Tweedy (National League for Physical Education and Improvement), a resolution was carried to the effect that it was desirable that a Central Health Committee for London should be formed. On the proposition of Professor Kenwood (vice-chairman of the National Health Society), seconded by Miss Prudence Gaffikin (Women's Imperial Health Association), it was decided that the following authorities and voluntary agencies be invited to appoint representatives upon the committee, which should have power to add to its number: Local Government Board, Board of Education, London County Council, Metropolitan Asylums Board, Association of Medical Officers of health (Metropolitan Branch), Jewish Board of Guardians, London Bible-women and Nurses' Mission or Ranyard Nurses, Mansion House Council on Health and Housing, National League for Physical Education and Improvement, National Health Society, National Bureau for Promoting General Welfare of the Deaf, Federation of Metropolitan District Nursing Associations (Queen Victoria's Jubilee Institute of Nurses), Royal Sanitary Institute, Women's Imperial Health Association, and the Social Welfare Association for London. Dr. Murray Leslie (chairman of the Women's Imperial Health Association) proposed and Mr. A. J. Martin (vice-chairman of the National Health Week Committee) seconded, the following resolution, which was carried:—

That the Social Welfare Association for London be requested to take steps to give effect to the resolutions and that the Local Government Board be asked to allow the committee to meet at the offices of the department.

UNIVERSITY OF LONDON: THE QUESTION OF A SITE.—For some time past the question of a site for the proposed new buildings of the University of London has been actively debated by many of those who are interested in higher education in the metropolis. The need for a central building, suitable to the work of the University and worthy of its name and standing, has not been challenged; but beyond this there has been considerable diversity of opinion which has not been concealed from the readers of the daily press. It is no doubt a pity that widely different views should have been held by those in authority, but in public matters, where a final decision means so much, it would be strange if unanimity were reached without some early dissensions. One of the first serious proposals was, of course, that the recently cleared site in Bloomsbury on the north aspect of the British Museum should be purchased for the new University buildings from the Bedford estate, and for this purpose several large sums were conditionally offered. Around this suggestion there arose a somewhat heated controversy; letters were written to the *Times*, questions were asked in Parliament, and a number of alternative sites, more or less appropriate, were openly put forward. Among these proposals one stood out as a fairly practical solution of the difficulty, provided that the necessary arrangements could be made. A part of Gray's Inn Gardens seemed quite out of the question, and a site on the Embankment had many objections in the eyes of those who desired to establish the focus of a real university and not to build an examination centre. But the Foundling Hospital, standing in nine acres of open ground in the heart of London, surrounded by quiet squares and accessible from everywhere by rail and omnibus and tram, at once commended itself to many as an appropriate site. Moreover, the present occupants, the 400 children of Captain Coram's foundation, would obviously not be worse off if they were removed from their historic home to modern country quarters. We are glad to record that the special committee appointed by the Senate of the University to consider the question of a site has decided to recommend the acquisition of the Foundling Hospital to this end, and that the Senate at its last meeting approved the recommendation of the committee.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. P. Rouvier, formerly director of the Medical Service of the French Army.—Dr. J. Chatin, professor of histology in the Faculty of Science and member of the Academies of both Science and Medicine of Paris.—Dr. Moritz Seidel, emeritus professor of pharmacology in the University of Jena. He was in early life assistant to Professor C. Gerhardt and was afterwards appointed extraordinary professor. He enjoyed an immense practice and was given the honorary freedom of the city. His professional work left him but limited time for literary work, but he contributed the article on Toxicology in "Maschka's Manual of Forensic Medicine." His age was 75. He is stated to have left £25,000 to the city and University of Jena.

DONATIONS AND BEQUESTS.—The late Mr. H. Seymour Trower, of Weybridge, has left, subject to his wife's life interest, £10,000 to Lord Meath, Sir George Sydenham Clarke, Lieutenant H. T. Knox, R.N., and Mr. Robert Edward Leman as trustees to form a "Woman's Aid Fund," to assist pregnant married or unmarried women with medical care and nursing before, during, and after confinement, so as to ensure, as far as may be, their safe delivery and their restoration to health and strength, and to assist them afterwards in the rearing of their offspring.—Miss Alberta Helena Louisa Tylor, of Fareham, Hants, has left by will a portion of her property, about £4000, as to £100 to the

Victoria Hospital, Chelsea, for the Kensington Cot Endowment Fund, and the balance to the Kensington District Nursing Association for Nursing the Poor in their own homes.—By will the late Mr. William Henry Millard, of Birmingham, has bequeathed, after certain personal legacies, the residue of his estate, about £15,000, to be divided into two parts for charitable purposes. One part on trust to pay £1000 to the Home for Incurables at Leamington, and the balance equally between the Birmingham General Hospital, the Queen's Hospital, Birmingham, the Children's Hospital, Birmingham, the Institution for the Blind, Birmingham, and the other as to £1000 to the Birmingham branch of the Royal Society for the Prevention of Cruelty to Animals, and the balance in personal bequests with a remainder to the Birmingham Hospital for Women, Sparkhill.—The late Mr. C. Bruce Cole, of Westbury-on-Trym, has bequeathed £2500 to the Bristol Royal Infirmary.

PRESENTATION TO A MEDICAL PRACTITIONER.—At Millbrook, Plymouth, on July 4th, the Rev. H. Pettman, on behalf of more than 100 subscribers, presented Dr. James Leslie Watt and Mrs. Watt with a silver salver, a case of Drake's spoons, a silver vase, an album containing the names of subscribers, together with an illuminated address, as a mark of respect and esteem on the occasion of their leaving Millbrook for Tavistock.

CENTENARIANS.—Mrs. Dinah Rogers, of St. Cleer, who has reached the age of 102 years, was, last week, admitted into the Liskeard Workhouse Infirmary.—Mrs. H. Proctor, of Painswick, who celebrated the 100th anniversary of her birthday on April 13th, died on July 7th.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Select Committee on Patent Medicines.

THE Select Committee of the House of Commons on Patent Medicines heard further evidence on Thursday, July 11th. Sir HENRY NORMAN was in the chair.

Mr. REGINALD E. CROSSE gave evidence on behalf of the British Medical Association, and dealt with advertisements of preparations and appliances which purported to relieve women's ailments.

The Committee heard detailed evidence on this matter in private.

Mr. P. MACLEOD YEARSLEY gave evidence of the evil effects which resulted from the use of "quack" remedies and appliances in the treatment of diseases of the ear. Advertisements dealing with deafness, he said, might be divided into two groups—one group which recommended a preparation to cure all forms of deafness without operation, and another group which recommended the purchase of some appliance. In respect to the first group, there were a number of persons whose favourite method was to treat by correspondence and to charge large sums for worthless plasters, drops, snuff, and the like. Not only were some of those so-called remedies worthless, but they were positively mischievous and set up irritation in the ear. He had seen at the Royal Ear Hospital patients with advanced middle-ear deafness, absolutely incurable by any drop treatment who had been using quack remedies with the result that their ear passages were in a condition of severe eczematous inflammation. As to the second group, the appliances advertised were for the most part "vibrators" and "artificial ear drums." Vibratory massage was of undoubted value in one form of deafness, but it was necessary that it should be applied with caution and under skilled supervision. Instruments of this kind used by patients indiscriminately might be positively harmful. So-called artificial drums were of value in certain cases, but most of the patterns advertised and sold by "quacks" were useless. They belonged for the most part to the rubber disc and metal stem variety or were simply rubber tubes closed at one end. Considerable irritation might be caused in ear passages by them, and he had in the course of his experience had on two particular occasions to remove foreign bodies of this kind from ear passages swollen with inflammation and bathed in foul pus. Artificial drums were sold by "quacks" at from 1 to 4 guineas, whereas their real value was about 1s. or 2s.

The committee adjourned.

The Committee held another meeting on Tuesday, July 16th, Sir HENRY NORMAN again being in the chair.

Sir MALCOLM MORRIS, consulting surgeon to the skin department of St. Mary's Hospital, gave evidence in regard to preparations which were advertised for the cure of skin diseases. He said that there was nothing about which people were so prejudiced as about secret remedies. The majority of intelligent people had no special knowledge to enable them to discriminate between valid and worthless preparations. He spoke also of the harmful results which followed the use of some advertised specifics for skin diseases. He had been in practice as a medical man for 40 years and for 35 years as a specialist in skin diseases. Some proprietary medicines were useful, and should not be interfered with. However, there were a larger number which did harm. Others were quite useless. In the latter class he would include preparations for ringworm, the itch, erysipelas, and infectious skin diseases. Useless preparations were extensively advertised for the treatment of serious diseases such as rodent ulcers and lupus (tuberculosis of the skin). Their use had the effect of causing time to be lost during which genuine remedies might be applied. He suggested that the public interest might be safeguarded by a censorship of patent medicine advertisements. His proposal was that a body of three Commissioners should be appointed. One of these should be a chemist who could analyse medicines and test the approximate truth of the statements made on their behalf. The second should be a medical man of experience who could state whether the curative properties claimed were genuine. The third member should be an independent person, perhaps a lawyer. The reason for the proposal was that the State now recognised a special responsibility for the health of the community.

Mr. GLYN JONES: I think you do not value very much the notification to the public of the contents of the medicine.

Sir MALCOLM MORRIS: I would rather have that than nothing, but I do not think it is of great value.

The CHAIRMAN: Do you consider that the case is sufficiently strong against these medicines that the matter demands immediate legislation?

Sir MALCOLM MORRIS: I do.

Dr. ARTHUR WHITFIELD, professor of dermatology, King's College Hospital, London, gave evidence, in which in the main he agreed with what Sir MALCOLM MORRIS had said. He did not think that it ought to be permissible to sell a remedy as the cure for enumerated diseases. Preparations should only be sold with a description of their action, and not with an enumeration of the diseases which they were supposed to cure. The key to the situation was the diagnosis.

The CHAIRMAN: Do you also hold that there is grave harm by the free sale and free advertisement of these preparations for the diseases of the skin?

Dr. WHITFIELD: I think the number of cases in which harm is done is, perhaps, not very large. But when harm is done it is appalling. Take the case of lupus. It may be cured at the beginning by a slight surgical operation, but if it is neglected it may be a life-long misery to the sufferer.

The Committee adjourned.

HOUSE OF LORDS.

WEDNESDAY, JULY 17TH.

The Medical Profession and the Insurance Act.

Lord HENEAGE called attention to the present position of the Insurance Act and to the fact that no arrangement had been arrived at by His Majesty's Government to ensure the coöperation of the medical profession in the administration of the Insurance Act, and he moved: "That in the opinion of this House, until such coöperation is ensured, the Government will fail efficiently to provide medical benefits in accordance with the law." In doing so, he said that his motion was practically the same as one passed by the House of Commons in May last. If the motion was necessary then, it was more than ever necessary now. The Chancellor of the Exchequer seemed to stand firm by the proposals in the Act, and the doctors stood as firmly in declining to accept the terms offered to them. Apparently the Insurance Commissioners admitted that the terms of the Act were not fair and reasonable. They admitted, therefore, that the remuneration under the Act should be greater than that received under hitherto existing conditions from Friendly Societies. As to the dispensing of medicines, he hoped that whatever was done the Chancellor of the Exchequer would give up the idea that the doctors should not dispense the medicines. The proposal that if all failed 6s. would be given back to the contributor was not satisfactory. It appeared to him after reading Mr. Lloyd George's speech of last Saturday that that gentleman ignored all the colossal difficulties. Under the Government proposals there would be a maximum cost in administration and a minimum of benefit to the community.

The Earl of LIVERPOOL, on behalf of the Government, said it was recognised on all hands that the coöperation of the doctors in the working of the Act was of vital importance, and everything that could be done was being done to get that coöperation. He was not going to oppose the motion, just as it had not been opposed in the House of Commons. There was a very strong feeling on both sides. The British Medical Association was going to meet this week and next, and it would be very undesirable to make any sort of statement as regarded conditions or anything beyond what had already been said till that meeting had taken place. He accordingly asked Lord Heneage not to press the matter now, so long as negotiations were pending in a friendly spirit, because he did not think anything should be done to hamper the negotiations.

The Earl of CAMPERDOWN asked the Government why the coöperation of the doctors was not given from the first. Why was it that during the last two or three months there had been a series of statements in the House of Commons to the effect that a settlement was nearly reached with the medical profession? So far as could be judged from the papers, the medical profession had never budged one inch from the position which they at first took up. What foundation had the Chancellor of the Exchequer and the Secretary to the Treasury for giving answers from which the only inference was that an agreement was on the point of being reached? Their lordships were asked not to press the question now, but the Chancellor of the Exchequer on

Saturday last made a statement of a nature from which Lord Liverpool now wisely recoiled. There was no use of concealing it from themselves that so far as the medical profession was concerned matters were at a deadlock. As to sanatorium benefit, the whole administration had entirely broken down. In conclusion, he said that the Chancellor of the Exchequer would do well, when he professed to be negotiating with the medical profession, not to deliver such a speech as he did on Saturday last.

Earl BEAUCHAMP, speaking for the Government, said that if he did not reply to attacks made on the Chancellor of the Exchequer it was because it was not well to make a reply when negotiations were in progress with the doctors. As to sanatorium benefit, the aim was to decentralise administration. Regarding the dispensing of medicine, there was a power under the Act for the Commissioners to permit the Insurance Committees in exceptional cases to allow the medical practitioners to supply medicines.

Viscount MIDLETON said that if their lordships were to be asked to refrain from criticism pending negotiations the Government should see to it that the Chancellor of the Exchequer should cease from his extraordinary utterances on the subject of the medical profession. The language of the Chancellor of the Exchequer, coming from a politician and a statesman, was neihter politic nor statesmanlike.

The motion was then agreed to.

HOUSE OF COMMONS.

WEDNESDAY, JULY 10TH.

Medical Benefit and Alternative Payments.

Mr. W. PEEL asked the Secretary to the Treasury whether the insured persons to whom the 6s. might be given in lieu of medical attendance, in the event of the Government being unable to come to an agreement with the doctors, would be expected to form benefit societies in order to secure medical attendance; would they be given the 6s. if they had not consulted a doctor during the year; would they be allowed to spend the 6s. on other matters than medical attendance; and whether 1s. 6d. out of the 6s. would be considered to have been given to the insured persons in lieu of free drugs.—Mr. MASTERMAN replied: If the local Insurance Committee in any district finds that adequate medical attendance cannot be given by the doctors who offer to serve on a general panel a variety of alternative systems of providing medical benefit may be adopted. If such alternatives prove impracticable or undesirable medical benefit may be suspended. If suspension takes place, it will be perfectly open to the insured persons, who will receive monetary equivalent, to make such arrangements for medical attendance and medicine as they have been making for many years past, and they will receive for such arrangements one and a half times the money which they have hitherto usually paid for them.

Mr. PEEL: Would the right honourable gentleman be good enough to answer the last two points in my question? Would they be allowed to spend the 6s. on other matters than medical attendance, and would 1s. 6d. out of the 6s. be considered to have been given to the insured person in lieu of free drugs?

Mr. MASTERMAN: Either of those alternatives is possible. It is possible that it may be arranged that a certain sum of money may be handed over to a society or the persons themselves for medical attendance, or it is possible that medical benefit will be completely suspended, in which case they can do what they like with the money.

Mr. PEEL: How would they be able to get proper medical attendance for the 6s. in view of the fact that the persons benefited will have to be insured? In this case they are not insured.

Mr. MASTERMAN: They can easily get insured. There is no difficulty in the matter. Up to now anyone in the working classes has been able to get medical attendance and drugs for something like an average of 4s. a year. He will now, for a payment of 2s. 8d., get 6s. a year if medical benefit is suspended. I do not see anything to complain of.

Mr. PEEL: In order to obtain these benefits will they be obliged to form approved societies on the lines of the old Friendly Societies, or how otherwise will they be able to get benefits?

Mr. MASTERMAN: That is one possible alternative. They may form medical institutes, friendly societies, or sick clubs. There are dozens of alternatives by which they may be able to obtain medical benefits.

The Marquis of TULLIBARDINE: Is the medical benefit guaranteed?

Mr. MASTERMAN: No, there is medical benefit and the alternative is a monetary payment.

Mr. GODFREY LOCKER-LAMPSON asked the right honourable gentleman—(1) whether the Government would pay the expenses of a test case before the courts as to whether contributions could be legally enforced under the National Insurance Act before it was known whether insured persons would be provided with medical benefit; (2) whether he would obtain the opinion of the law officers of the Crown as to whether the National Insurance Act was to be construed as a contract between the Government and insured persons; and (3) whether he would obtain the opinion of the law officers of the Crown as to whether contributions could legally be deducted from the wages of insured persons before it was known whether the medical benefit promised under the National Insurance Act would be able to be given.—Mr. MASTERMAN answered: The Act requires contributions to be paid in respect of employed contributors and authorises deductions from their wages without reference to the exact benefits to which they may at any time be entitled. The Act definitely states that medical attendance and medicine or an alternative of monetary payment will be provided from Jan. 15th onwards, and there is no doubt at all that one of these alternatives will be provided for insured persons. I am advised that the effect of the law is so clear that there would be no justification for occupying the time of the law officers of the Crown by referring a case to them or for promoting a test action, though it would, of course, be open to any honourable Member who reads the Act otherwise to see that the matter is brought before the courts.

Housing in Ystradgynlais Rural District.

Mr. JOHN WILLIAMS asked the President of the Local Government Board, whether, in view of the statements and figures contained in the recent annual report of the medical officer of health for the Ystradgynlais rural district as to overcrowding and the occupation of insanitary dwellings, he would represent to the local authority the urgency of taking steps to put into operation the provisions of Part III. of the Housing of the Working Classes Act.—Mr. BURNS replied: I addressed a letter to the rural district council on the 5th inst., requesting them to give immediate attention to the question of proceeding under Part III. of the Housing of the Working Classes Act, 1890.

Colour-blindness and Sight Tests.

Mr. LYNCH asked the President of the Board of Trade whether the results obtained by the Committee on Sight Tests had been of a nature to demonstrate the superiority of the lantern test for colour-blindness over the wool test; and whether, seeing that the lantern invented by Dr. Edridge-Green had been found satisfactory by the Admiralty, he could explain why the Board of Trade proposed to adopt another lantern.—Mr. BUXTON said in reply: I am not aware that the report of the Departmental Committee on Sight Tests contains any expression of opinion as to whether the wool test or the lantern test is the better test for colour-blindness. In the opinion of the Commissioners each method is to some extent supplementary to the other. The recommendations of the Committee are at present receiving my careful consideration with a view to giving effect to them so far as possible at the earliest possible date.

Tuberculous Persons in Prisons.

Mr. KING asked the Secretary of State for the Home Department what treatment was accorded to prisoners who during their terms of imprisonment were discovered to be affected with tuberculous disease; and whether any statistics were available showing the number of patients so affected and treated and the progress of disease during imprisonment.—Mr. MCKENNA replied: Prisoners suffering from tuberculous disease, if not so ill as to necessitate admission to hospital, are located together in cells specially provided for such cases. These cells are situated in the most airy ward of the prison with a south, south-east, or south-west aspect, and have a special window which opens widely providing ample light. This window can be left open day and night if the weather permits. The walls are finished off, leaving a smooth surface, so as to be readily washed and disinfected. The furniture and fittings of the cell are also arranged with the same view. Special precautions are taken to prevent infection, and the prisoner's health is subject to the medical officer's special care. No statistics are available showing the number of prisoners so affected and treated. The weight and general health when discharged are recorded, as is done with all prisoners, but no special record of progress of these prisoners has been collected, the sentences of many being so short that no good purpose would be gained thereby.

THURSDAY, JULY 11TH.

The Provision of Sanatorium Treatment.

Sir RANDOLF BAKER asked the Secretary to the Treasury (1) how many beds were available in sanatoria for consumption throughout the country, and how many were now vacant; (2) how many new buildings for consumptive sanatoria have been started since Jan. 1st, 1912; how many schemes were now known to be in existence for the supply of consumptive sanatoria; and how many beds would be available in these buildings when completed; and (3) how much money had been actually expended during the past six months in the provision of consumptive sanatoria.

Mr. WRIGHT also asked the right honourable gentleman whether he could now state how many, and where, sanatoria and tuberculin dispensaries had been, or would have been provided by July 15th, 1912; and how many beds in existing institutions would on that date be available for insured persons entitled to sanatoria benefit as from that date.—Mr. MASTERMAN replied: It is not possible to state with accuracy the number of sanatoria and dispensaries available for the Local Insurance Committees. According to the latest information, however, there are some 76 institutions designated as sanatoria in England with about 2500 beds, while accommodation for tuberculosis cases also exists in a very large number of hospitals in addition to some 57 tuberculosis dispensaries. Local authorities have for some time past been preparing schemes for the provision of institutions for the treatment of tuberculosis, and with the coöperation of the Insurance Committees which have now been constituted these schemes are now being proceeded with. In Scotland the Local Government Board is proceeding with the inspection of the sanatoria with a view to their approval. In Ireland there are about 700 beds available in sanatoria, and the provision of dispensaries is being rapidly pushed on in the several counties.

Mr. LEE: Would the right honourable gentleman kindly answer the last part of the question? I do not think he has stated how many beds there are in England and Scotland.

Mr. MASTERMAN: That cannot be stated until we get information from the Local Insurance Committees who are making arrangements.

Mr. CATHCART WASON: In view of the fact that open-air treatment is largely resorted to for tuberculosis, may I ask the right honourable gentleman whether he will not think it inadvisable to make any very great expenditure in the way of buildings?

Mr. MASTERMAN: That, no doubt, is one of the subjects which is now being considered by the Local Government Board in conjunction with the local authorities.

Mr. GRANT asked the right honourable gentleman whether it was proposed to commence sanatoria benefits under the National Insurance Act on and after July 15th; and whether it was possible to give sanatoria benefits without the coöperation of the medical profession.—Mr. MASTERMAN said in reply: The answer to the first part of the question is in the affirmative. I have no reason to suppose that sanatoria will reject cases or that medical practitioners will refuse to attend their ordinary patients merely because they are insured under the Act.

Mr. GRANT subsequently asked leave to move the adjournment of the House in order to call attention to a definite matter of urgent public importance—namely, the inability of the Government to fulfil its pledge to provide sanatoria benefit during the course of the next week to every insured person entitled thereto.

Leave having been obtained, Mr. GRANT, at a quarter past eight o'clock, moved his motion. The honourable Member said that under the National Insurance Act sanatorium benefits came into operation on July 15th. He wanted to know beyond a shadow of a doubt that sanatorium benefit as promised by the Government could be given next week, and where the sanatoriums were which were to house the consumptive workpeople in this country. He did not know whether the Government had managed to get a certain number of medical men to endeavour to work the sanatoriums, but he did not believe that the Government had either sanatoriums or medical men to work the Act.

Mr. LLOYD GEORGE: You hope they have not.

Mr. GRANT: What right has the right honourable gentleman to say that?

Mr. LLOYD GEORGE: I have every right to say it.

Mr. GRANT: On what ground does the right honourable gentleman say it? What he says is not correct. I tell the right honourable gentleman that he has no right to say such a thing. It is absolutely false.

The DEPUTY CHAIRMAN (Mr. Maclean): That is not a Parliamentary expression, and I am sure that the honourable Member will withdraw it.

Mr. GRANT: If I have said anything to offend the chair I certainly withdraw it. He wanted to know on what ground of morality the Government would tax the population of the country for benefits which they would not be in a position on Monday next to give.

Mr. ASTOR seconded the motion. He pointed out that the report of the committee over which he presided recommended that the machinery for the sanatorium benefit should consist of two units—the second unit being sanatoria and the first unit the dispensary. It was admitted that the dispensary and the sanatoria to a very great extent would not be ready for some weeks or months. Therefore it would be necessary to send many insured persons to be treated in their homes. Further, no person could come forward and say definitely the number of persons who were going to be consumptive during the summer and autumn, and therefore no one had any right to say that there were going to be few calls on the sanatorium benefit during the next few months. The sanatorium benefit ought to be postponed until a real first-class sanatorium benefit could be given. It was no good telling a man to go to the doctor who had treated him and get a bottle of cod-liver oil. That was not the sort of sanatorium benefit that insured persons were expecting, and had been led to believe that they would receive. He suggested a postponement of the sanatorium benefit for six months, with a compensating acceleration of the date at which maternity benefit should come into operation.

Mr. MASTERMAN, in replying on behalf of the Government, said that it was freely confessed by the Chancellor of the Exchequer in last autumn that it was idle to suppose that full machinery to deal with every tuberculous patient could be produced by this July. However, the Government had realised that it was their duty at the earliest possible opportunity to bring in the Governmental forces which were to be engaged in fighting what was called the "white plague." Because they could not do all that they wished was no reason why they should do nothing at all. They were providing provisional arrangements which at least could do no harm to the full scheme when completed. How far were they able to carry out the suggestions of the Astor Committee from July 15th onwards? First of all the local Insurance Committees upon whom the duty was laid of considering the subject of dealing with tuberculous patients had held meetings. Over 100 committees had been formally constituted, and the other 21 would be formally constituted before the present week was over. In the great bulk of them 70 to 80 representatives of the Insurance Commissioners had attended their first meetings in order to explain to them the system of the Astor report and to show how they could take immediate action in connexion with sanatorium benefits. The great bulk of these had constituted subcommittees immediately to deal with any tuberculous patients who happened to be insured persons after July 15th. What, on the other hand, had been the work of the local authorities? He would say quite frankly that the work of the local authorities in connexion with the Local Government Board had been delayed by the sittings of the Astor Committee. It would have been quite easy on their part to proceed hastily with putting up buildings without that expert advice which that Committee provided, and if they had been wrong in delaying matters, it had been owing to the advice and work done, and very well done, by the member for Plymouth (Mr. Astor) in a subject which was still full of controversy. It would have been folly on their part to make preparations until they had the result of such a committee as that which the honourable gentleman presided over. What was their position now? A large number, including most of the county boroughs, had prepared schemes for dealing with tuberculosis under the Act, and were only waiting for the formation of the Insurance Committees which would have authority to negotiate from Monday next in order that this scheme might be carried into actual realisation. A substantial number of these schemes had been presented to the Local Government Board. All the available institutions at present for dealing with tuberculous patients would be immediately utilised by the Local Insurance Committees, and some of them had already been promised beds in such institutions. Temporary accommodation was also being devised and would be established in a few weeks. Vacant hospital accommodation at present unused was being pushed forward by the local authorities in conjunction with the Local Government Board in order to provide temporary accommodation until more permanent sanatoria could be created. The voluntary associations which were engaged in this work were multiplying the accommodation which they possessed, and were seeking a grant in help for that multiplication. Many moveable temporary shelters, such as those recommended, he thought, by the Astor report as better than permanent buildings, were possessed by local authorities, and would be at the disposal of patients recommended by the Insurance Committees, and many local authorities were asserting their intention accordingly to increase the number of moveable shelters. Immediately that they can get into touch with the Local Insurance Committees they will increase that accommodation.

Mr. ASTOR: We did not say that the moveable shelters were better.

Mr. MASTERMAN: I do not mean in the least degree to misrepresent what the report recommends, but I think the report agrees that they might be very useful, at all events in this weather. Other local authorities were designing to take private country houses which might be used for temporary shelter, and the whole bulk of the local authorities engaged in this work were pushing forward the matter in every way in their power, and in a few weeks would be able to dispose of as many patients as the local Insurance Committees were able to send them. The honourable Member urged that it was undesirable to force forward dispensary arrangements. The Insurance Commissioners were entirely in accord with his own view. There were at present a large number of dispensaries existing, and these would be fully used by the local authorities and the local Insurance Committees. It was not the difficulty of building and getting accommodation. It was the difficulty of getting trained tuberculosis attendants, and the Insurance Commissioners had no intention of forcing forward the adoption of officers who were not trained experts in order to get the Act into operation in these particular districts. New dispensaries would be opened every week, and officers, and particularly the younger members of the medical profession who were filled with enthusiasm for this work and were prepared to take on these dispensaries, would be engaged in the Local Government service from time to time, and he had no doubt that long before January came the Government would be able to announce the complete work of the dispensaries over the whole country. Another point was the question of temporary treatment, and there also the honourable gentleman would correct him if he were wrong. He thought that the Astor report somewhat surprised those who over-emphasised sanatorium benefit by the very considerable emphasis it laid on the very great good which could be done by temporary treatment in the home. The fact was without a shadow of a doubt that temporary treatment for insured persons suffering from tuberculosis could begin immediately the disease was diagnosed. An immediate system was devised for systematic treatment in the home with payment to the doctor of the patient. Here there was no controversy. There was no doubt at all that, quite apart from any difference that existed with respect to medical benefit which he hoped would be satisfactorily settled, he was perfectly certain home treatment would be put into force immediately the tuberculous patient was diagnosed. He could not conceive why the honourable Members should wish to postpone this treatment for six months rather than do what they could to give perfectly sound medical treatment as far as it went. He agreed that it was impossible to say how many employed persons were suffering from tuberculosis during the last six months. The Government had estimated an expenditure of £220,000 for the next six months for the treatment and cure of consumption. Honourable Members know that the abandonment and postponement of that and the placing of that sum to the ordinary insurance fund must inevitably mean great quantities of suffering unalleviated and numbers of lives unsaved. He could not understand anyone who was not blinded by party prejudice who would offer what was practically a vote of censure against the Government for endeavouring to do what was possible at the earliest possible moment to combat one of the worst ills to which human flesh is heir.

Mr. H. W. FORSTER considered that further time should be given to organise the necessary service.

Dr. ADDISON, Sir PHILIP MAGNUS, and other honourable Members continued the debate.

The motion for the adjournment was rejected by 259 votes to 148.

TUESDAY, JULY 16TH.

Sanatoria Benefit.

In answer to Mr. WRIGHT, Mr. MASTERMAN (Secretary to the Treasury) said: No reports have as yet been received from Insurance Committees as to the institutions with which arrangements are proposed to be made with a view to the treatment of insured persons suffering from tuberculosis, nor as to the numbers of applications which they have received for provision of the sanatoria benefits.

Medical Men and the Insurance Act.

Mr. F. HALL (Dulwich) asked the Secretary to the Treasury to state how many doctors were now known to be available in connexion with the administration of medical benefit under the National Health Insurance Act; and what was the number of persons which it was estimated would have to be dealt with as regards this section of the benefit.—Mr. MASTERMAN replied: It is the duty of the local Insurance Committees, under Section 15 of the Act, to make arrangements for local panels of medical men of those who are willing to serve on such panels under regulations made by the Commissioners. Those regulations are now under the consideration of the Advisory Committee, and until they are issued and the committees have commenced this work it is impossible to state how many medical men will be available in connexion with the administration of medical benefit. If in any district the medical men willing to serve on panels are not such as to provide an adequate medical service, the Insurance Commissioners may authorise the Insurance Committees to make other arrangements, or may themselves make such arrangements as they think fit. It is estimated that some 12 millions of insured persons will be entitled to medical benefit or a monetary equivalent.

Morphia and Cocaine in India.

Sir J. D. REES asked the Under Secretary of State for India whether he could give the House any information regarding the action taken to restrict the consumption of cocaine and morphia and their respective congeners in India; and whether the Powers concerned had accepted the recommendations of the Hague Convention in this behalf.—Mr. MONTAGU replied: With a view to control the use of morphia and cocaine in India, their importation by post is altogether prohibited, and their importation by other means is severely restricted, and is limited to persons holding permits issued by prescribed authorities. The manufacturer of morphia from illicit opium by private persons is prohibited, and the amount of morphia which a private person may possess is limited. Transport from place to place is carefully regulated, as is also sale, both wholesale and retail. As regards cocaine, its sale is restricted to chemists and druggists holding licences, and sale by them to private persons must be for *bond-fide* medicinal purposes and on the prescription of a qualified medical practitioner. The Hague Convention has not yet been ratified by the Powers.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, London.

A Manual of Diseases of the Naso-Pharynx. With Especial Reference to the Part played by them in Diseases of the Ear, and the Treatment of these Conditions. By Chas. A. Adair Dighton, M.B., F.R.C.S. Ed., Hon. Assistant Surgeon, Eye and Ear Infirmary, Myrtle-street, Liverpool. Price 10s. 6*d.* net.

CABLE PRINTING AND PUBLISHING CO., LIMITED, Hatton House, Great Queen-street, London, W.C.

The Perpetual Flowering Carnation. By Montagu C. Allwood, F.R.H.S. With a Chapter on the American System of Carnation Culture, by George W. Allwood. Price 3*s.* net.

CLARENDON PRESS, Oxford.

The Anatomy of the Human Eye as Illustrated by 67 Enlarged Stereoscopic Photographs. By Arthur Thomson, M.A., M.B., F.R.C.S., Professor of Human Anatomy in the University of Oxford. Price £2 2s. net.

FROWDE, HENRY, AND HODDER AND STOUGHTON, Edinburgh, Glasgow and London.

Manual of Surgery. By Alexis Thomson, F.R.C.S. Ed., Professor of Surgery, University of Edinburgh; Surgeon, Edinburgh Royal Infirmary; and Alexander Miles, F.R.C.S. Ed., Surgeon, Edinburgh Royal Infirmary. Volume Third. Operative Surgery. Price 10s. 6d. net.

Stomatology in General Practice. A Text-book of Diseases of the Teeth and Mouth for Students and Practitioners. By H. P. Pickerill, M.D., Ch.B., M.D.S. Birm., L.D.S. Eng., Hon. Stomatologist to the General Hospital, Dunedin, Professor of Dentistry and Director of the Dental School in the University of Otago. Price 15s. net.

Text-book for Nurses: Anatomy, Physiology, Surgery, and Medicine. By E. W. Hey Groves, M.S., F.R.C.S., Assistant Surgeon, Bristol General Hospital, Clinical Lecturer, University of Bristol; and J. M. Fortescue-Brickdale, M.A., M.D., Assistant Physician, Bristol Royal Infirmary, Clinical Lecturer, University of Bristol. Price 12s. 6d. net.

LAURIE, T. WERNER, Clifford's Inn, Fleet-street, London.

Spring Days. By George Moore. Price 6s.

LONGMANS, GREEN, AND CO., London, New York, Bombay, and Calcutta.

The Physiology of Protein Metabolism. By E. P. Cathcart, M.D., D.Sc., Grieve Lecturer on Chemical Physiology in the University of Glasgow, Research Associate of the Carnegie Institution, Washington. Price 4s. 6d. net.

The Annual Charities Register and Digest. With an Elaborate Index and an Introduction, "How to Help Cases of Distress." By C. S. Loch, Secretary to the Council of the Charity Organisation Society, London. Twenty-first edition. 1912. Price 5s. net.

MACMILLAN COMPANY, THE, New York. MACMILLAN AND CO., LIMITED, London.

The Healthy Baby: The Care and Feeding of Infants in Sickness and in Health. By Roger H. Dennett, M.D., Instructor in Diseases of Children in the New York Post-graduate Medical School. Price 4s. 6d. net.

MARHOLD, CARL, Verlagsbuchhandlung, Halle a.S.

Die Irrenpflege in Österreich in Wort und Bild. Redigiert von Dr. Heinrich Schlöss, k.k.Regierungsrat und Direktor der n.ö. Landesanstalten am Steinhof in Wien. (In halbfranz gebunden.) Price M.15.

Deutsche Heil und Pflegeanstalten für Psychischkranke in Wort und Bild. II. Band (Schlussband). Redigiert von Dr. Johannes Bresler. Mit Register fur Band I. und II. (In halbfranz gebunden.) Price M.19.

SCIENTIFIC PRESS, LIMITED, London.

Physiology and Anatomy Made Easy. By Lucy Brooks, late sister at the Victoria Hospital, Hull; trained at the General Infirmary, Leeds. Price 1s. 6d. net.

How to Become a Certified Midwife. By E. L. C. Appel, M.B., B.S., B.Sc. Lond. New edition. Revised and brought up to date by Victoria E. M. Bennett, M.B., B.S. Lond., D.P.H. Cantab., Author of "Lectures to Practising Midwives." Price 6d. net.

Surgical Instruments and Appliances used in Operations. An Illustrated and Classified List, with Explanatory Notes. By Harold Burrows, M.B. Lond., B.S., F.R.C.S., late Assistant Surgeon to the Seamen's Hospital and to the Bolingbroke Hospital; Assistant to the Royal Portsmouth Hospital. Fourth edition. Revised and enlarged. Price 1s. 6d. net.

Lectures upon the Nursing of Infectious Diseases. By F. J. Woollacott, M.A., M.D., B.Ch. Oxon., D.P.H., Senior Assistant Medical Officer, Grove Hospital, Metropolitan Asylums Board. Second edition. Price 2s. 6d. net.

UNWIN, T. FISHER, London and Leipsic.

Suggestion and Psychotherapy. By George W. Jacoby, M.D., Fellow of the New York Academy of Medicine, Member of the American Medical Association, American Neurological Association, and New York Neurological Society; Consulting Neurologist to the Hospital for Nervous Diseases, the German Hospital, the Beth Israel Hospital, the Red Cross Hospital, and the Infirmary for Women and Children, in the City of New York. Price 7s. 6d. net.

WRIGHT, JOHN, AND SONS, LIMITED, Bristol. SIMPKIN, MARSHALL, HAMILTON, KENT, AND CO., LIMITED, London.

The New Physiology in Surgical and General Practice. By A. Rendle Short, M.D., B.S., B.Sc. Lond., F.R.C.S. Eng., Hon. Surgical Registrar, Bristol Royal Infirmary, Senior Demonstrator of Physiology, University of Bristol. Second edition, revised and enlarged. Price 5s. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BALL, W. GIRLING, F.R.C.S. Eng., has been appointed Surgical Registrar at St. Bartholomew's Hospital.

BRADFORD, Sir J. ROSE, K.C.M.G., F.R.S., has been appointed Senior Medical Adviser to the Colonial Office.

BROOK, T. STANBURY, M.R.C.S., L.R.C.P. Lond., has been appointed Medical Officer of Health to the Chingford Urban District Council.

CLIFFORD, W., L.R.C.S. Irel., L.K.Q.C.P. Irel., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Adare District of the county of Limerick.

DANIELS, C. W., M.B. Cantab., M.R.C.P. Lond., has been appointed Junior Medical Adviser to the Colonial Office.

GELLÉ, ERNEST S., M.B., B.S. Durh., has been appointed House Surgeon to the Italian Hospital, Queen-square, W.C.

LEISHMAN, A., L.F.P.S. Glasg., has been appointed Assistant Medical Officer to the Teesdale Board of Guardians.

REECE, RICHARD, M.D. Cantab., D.P.H., has been appointed Assistant Medical Officer to the Local Government Board.

SHAW, A., M.D. Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the St. Austell District of the county of Cornwall.

WARD, HERBERT GIBBONS, M.D., Ch.B., D.P.H. Vict., has been appointed Medical Officer of Health and School Medical Officer for the Borough of Royal Leamington Spa.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BANGOR, CARNARVONSHIRE AND ANGLESEY INFIRMARY.—House Surgeon. Salary £100 per annum, with board, lodging, and washing.

BARNSLEY, BECKETT HOSPITAL AND DISPENSARY.—Second House Surgeon, unmarried. Salary £100 per annum, with apartments, board, and laundry.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House Surgeon. Salary £80 per annum, with board and laundry.

BIRMINGHAM UNIVERSITY.—Lecturer in Physiological Department. Salary £200 per annum.

BRIDGWATER HOSPITAL.—House Surgeon, unmarried, for six months. Salary at rate of £100 per annum, with board, lodging, and washing.

BRISTOL ROYAL INFIRMARY.—Resident Casualty Officer for six months. Salary at rate of £50 per annum, with board, apartments, and laundry.

BRIXTON DISPENSARY, Water-lane, S.W.—Resident Medical Officer unmarried. Salary £175 per annum, with apartments, attendance, coal, and gas.

CARDIFF, KING EDWARD VII.'s HOSPITAL.—House Surgeon for six months. Salary £30, with board, residence, and laundry.

CARSHALTON, SURREY, QUEEN MARY'S HOSPITAL FOR CHILDREN.—Assistant Medical Officer. Salary £150 per annum, with board, lodging, and washing.

CHARING CROSS HOSPITAL.—Assistant Surgeon for Diseases of the Throat, Ear, and Nose.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—Junior House Surgeon. Salary £80 per annum, with board, apartments, and laundry.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—House Physician for six months. Salary at rate of £75 per annum, with board ane washing.

COVENTRY AND WARWICKSHIRE HOSPITAL, Coventry.—Junior House Surgeon. Salary £90 per annum, with rooms, board, washing, and attendance.

CROYDON GENERAL HOSPITAL.—Anæsthetist and Junior House Surgeon. Salary £75 per annum, with board, laundry, and residence.

DERBY COUNTY BOROUGH EDUCATION COMMITTEE.—School Medical Officer. Salary £250 per annum.

DERBY, ROYAL DERBY AND DERBYSHIRE NURSING AND SANITARY ASSOCIATION.—Honorary Obstetric Physician to the Nightingale Nursing Home.

DOWN COUNTY COUNCIL TUBERCULOSIS DISPENSARY. — Medical Superintendent. Salary £500 per annum.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—House Surgeon and Assistant House Surgeon. Salary £80 and £65 per annum respectively, with board and washing.

EXETER, ROYAL DEVON AND EXETER HOSPITAL.—Assistant House Surgeon for six months. Salary at rate of £80 per annum, with board, apartments, and washing.

FULHAM INFIRMARY, St. Dunstan's-road, Hammersmith, W.—Junior Assistant Medical Officer for six months. Salary at rate of £100 per annum, with board, apartments, and washing.

GLOUCESTER, GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION.—Assistant House Surgeon for six months. Salary at rate of £80 per annum, with board, residence, and washing.

GRAVESEND HOSPITAL.—House Surgeon. Salary £100 per annum, with board and residence.

HEREFORD COUNTY AND CITY ASYLUM, Burghill, Hereford.—Two Assistant Medical Officers. Salary £170 and £130 per annum respectively, with board, lodging, washing, &c.

HULL ROYAL INFIRMARY.—Assistant House Surgeon. Salary at rate of £80 per annum for six months, or £80 per annum for twelve months, with board and lodging.

KENSINGTON AND FULHAM GENERAL HOSPITAL, Earl's Court, London, S.W.—Resident Medical Officer. Salary at rate of £75 per annum, with board and laundry.

LANCASTER, ROYAL LANCASTER INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with residence, board, attendance, and washing.

LEAMINGTON SPA, WARNEFORD GENERAL HOSPITAL.—House Physician. Salary £85 per annum, with board, residence, and laundry.

LEEDS CITY INFECTIOUS DISEASES HOSPITALS.—Junior Assistant Medical Officer, unmarried, for six months. Salary at rate of £130 per annum, with board, lodging, and washing.

LEICESTER ROYAL INFIRMARY.—Assistant House Surgeon for six months. Salary at rate of £80 per annum, with board, apartments, and washing.

LIVERPOOL DISPENSARIES.—Head Surgeon, unmarried. Salary £170 per annum, with board and apartments.

LONDON COUNTY ASYLUM, Colney Hatch, New Southgate, N.—Junior Assistant Medical Officer, unmarried. Salary £170 per annum, with board, apartments, and washing.

MACCLESFIELD GENERAL INFIRMARY.—Senior House Surgeon. Salary £100 per annum, with board and residence.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road.—Honorary Clinical Pathologist.

MERTHYR TYDFIL UNION WORKHOUSE.—Assistant Medical Officer. Salary £150 per annum, with apartments, rations, laundry, and attendance.

METROPOLITAN EAR, NOSE, AND THROAT HOSPITAL, Fitzroy-square, W.—Anæsthetists.

MIDDLESBROUGH, NORTH RIDING INFIRMARY.—Assistant House Surgeon. Salary £75 per annum, with board, residence, and washing.

NOTTINGHAM GENERAL DISPENSARY.—Assistant Resident Surgeon, unmarried. Salary £160 per annum, with apartments, attendance, light, and fuel.

POPLAR HOSPITAL FOR ACCIDENTS, Poplar, E.—Assistant House Surgeon for six months. Salary at rate of £30 per annum, with board and residence.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Physician to Out-patients.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, London, E.C.—Medical Officer for Prevention of Consumption Department. Salary £250 per annum.

ROYAL NAVAL MEDICAL SERVICE.—Fifteen appointments.

RYDE, ROYAL ISLE OF WIGHT COUNTY HOSPITAL.—Resident House Surgeon, unmarried. Salary £100 per annum.

ST. MARY'S HOSPITAL FOR WOMEN AND CHILDREN, Plaistow, E.—Assistant Resident Medical Officer, unmarried, for six months. Salary at rate of £80 per annum, with board, residence, and laundry.

ST. THOMAS'S HOSPITAL.—Chemical Pathologist.

SALFORD ROYAL HOSPITAL.—Casualty House Surgeon from August 6th to Sept. 30th. Salary at rate of £65 per annum, with board and residence.

SCARBOROUGH HOSPITAL AND DISPENSARY.—Junior House Surgeon for six months. Salary £80 per annum, with residence, board, and allowance for laundry.

SHEFFIELD ROYAL HOSPITAL.—Sixth Resident, unmarried. Salary £60 per annum, with board, lodging, and washing.

SHEFFIELD ROYAL INFIRMARY.—Junior Resident Medical Officer. Salary £70 per annum.

SOUTHAMPTON FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and laundry.

SOUTHPORT INFIRMARY.—Resident Junior House and Visiting Surgeon, unmarried, for six months. Salary £70 per annum, with residence, board, and washing.

STAFFORD, STAFFORDSHIRE COUNTY ASYLUM.—Assistant Medical Officer, unmarried. Salary £160 per annum, with apartments, board, and washing.

STAFFORD, STAFFORDSHIRE GENERAL INFIRMARY.—House Physician. Salary £100 per annum, with board, residence, and laundry. Also House Surgeon. Salary £120 per annum, with board, residence, and laundry.

STOCKPORT INFIRMARY.—Junior House Surgeon. Salary £80 per annum, with board, washing, and residence.

STOCKPORT UNION, STEPPING HILL HOSPITAL.—Resident Assistant Medical Officer. Salary £130 per annum, with apartments, rations, &c.

TUNBRIDGE WELLS GENERAL HOSPITAL.—House Physician, unmarried. Salary £100 per annum, with board, residence, &c.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Surgeon for six months. Salary £40, with board, lodging, and laundry.

WEST BROMWICH DISTRICT HOSPITAL.—Assistant Resident House Surgeon, unmarried. Salary £75 per annum, with board, residence, and washing.

WESTMINSTER GENERAL DISPENSARY, 9, Gerrard-street, Soho, W.—Resident Medical Officer. Salary £120 per annum, with rooms, gas, coals, and attendance.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy as Certifying Surgeon under the Factory and Workshop Acts at Newtyle, in the county of Forfar.

Births, Marriages, and Deaths.

BIRTHS.

GIBBES.—On July 11th, at Church-street, Kensington, W., the wife of Lewes N. Gibbes, M.R.C.S., L.R.C.P., of a daughter.

HEARDER.—On July 10th, at Morven, Ilkley, to Dr. and Mrs. T. Browne Hearder—a son.

POWELL-EVANS.—On July 11th, at Berth Ddu, Wimbledon, the wife of David Robert Powell-Evans, M.R.C.S., L.R.C.P., L.S.A., of a son.

MARRIAGES.

CANDY—SUTHERLAND.—On July 16th, at St. John's Church, Richmond, Ronald Herbert Candy, M.B., B.S., M.R.C.S., L.R.C.P., Lieutenant, Indian Medical Service, to Lilian Amy, youngest daughter of the late William Sutherland and of Mrs. Sutherland, of Richmond.

STOPFORD-TAYLOR—KAY.—On July 11th, at St. Mary's Chapel for the Blind, by the Rev. T. W. M. Lund, M.A., George G. S. Stopford-Taylor, M.D., of 26, Rodney-street, Liverpool, and Standishgate, Hoylake, to Annie, elder daughter of the late W. J. Kay and Mrs. Kay, Halifax. At home Sept. 17th and 18th at Standishgate, Stanley-road, Hoylake.

DEATHS.

JEFFREY.—At Glenbank, Jedburgh, on July 16th, William Jeffrey, M.D.

SHILLITOE.—On July 10th, at Bournemouth, Alfred Ashby, M.B., aged 49, son of Buxton Shillitoe, of Birch Mount, Sydenham Hill.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

HEALTH MATTERS IN WEI-HAI-WEI.

Sir J. H. Stewart Lockhart, K.C.M.G., Commissioner of Wei-hai-wei, has forwarded to the Colonial Office a report for the year 1911 on the affairs of the Territory. The latter, leased to Great Britain by China in 1898, lies in latitude 37·30 N., longitude 122·10 E. It is situated in the Chinese province of Shantung, and comprises the island of Liu Kung, all the islands in the Bay of Wei-hai-wei, and a belt of land ten English miles wide along the entire coast-line, with a total area of about 285 square miles and a population of about 146,000. The Government medical officers are Dr. H. Hickin and Dr. W. M. Muat. Sir Stewart Lockhart's report states, *inter alia*, that a new hospital has been opened at Wênch'uant'ang in buildings which belong to the neighbouring villages, and has been placed in charge of Mr. Ma, who has had 20 years' experience of medical work in the American Presbyterian Mission Hospital at Tsinanfu, the capital of the province of Shantung. In order to encourage the Chinese to make use of the new hospital and the medical assistant in charge of it no fees of any kind have been imposed for medical attendance, treatment, or drugs. The result has been most satisfactory, for during a period of eight months 4844 patients applied for medical aid, the number of attendances being 9054. This remarkable success has been in a large measure due to the personality of Mr. Ma, who by his courtesy and kindly manner has so gained the confidence and esteem of the Chinese that they readily seek his aid and advice. Mr. Ma has been especially successful in dealing with cases of attempted suicide, having saved no fewer than 32 persons since he entered upon his duties. It has been decided in future to make a charge for drugs supplied to such patients as can afford to pay for them.

The in-patients treated during the year in the hospital on the island numbered 11, as compared with 16 in 1910, whilst the out-patients were 1715 as compared with 2277 during the previous year. At the Port Edward Hospital there were 90 in-patients, as compared with 97 in 1910, and 3909 out-patients as compared with 3063 in 1910. The number of operations was 59. Amongst them were three successful cases of abdominal section, the satisfactory result of which caused great surprise among the Chinese interested, and moved some of them to show their appreciation and gratitude by presenting to Dr. Muat, to be hung in the Port Edward Hospital, a tablet on which are inscribed Chinese characters meaning that through his skill those who were about to die have been restored to life.

The general health of the Territory was very satisfactory during the year. There was no epidemic of any kind. Six cases of whooping-cough occurred among Europeans. There seems to be no doubt that the disease was imported. There was one case of diphtheria and one of scarlet fever, both of which recovered; 12 cases of dysentery and 24 of mumps. There has been no recurrence of plague. The number of vaccinations performed on the mainland was 3841 and on the island 211.

Meteorological returns show that the highest monthly barometrical average was that of September, 30·834, and the lowest that of May, 29·016. The average monthly range was 0·909. The highest temperature was 89° in May and the lowest 2° in January. Rain and snow fell on 84 days, the annual rainfall being 39·60 inches. July was the wettest month, with a rainfall of 10·46 inches.

Suicides continue to be numerous; 94 cases were reported—31 men and 63 women. In the previous year there were 90 cases—25 males and 65 females. As already stated, there were in addition 32 cases of attempted suicide in which life was saved through an early report having been made to the medical authorities. There was formerly great delay on the part of the people in reporting such attempts, but owing to the steps taken to impress upon the headmen of villages the necessity of obtaining remedies or calling in medical assistance promptly many cases are now saved which would formerly have terminated fatally.

The number of persons licensed to smoke opium during 1911 was 42, as compared with 50 in 1910. The licensed smokers are all either over 50 years of age or suffer from some chronic disease. Although there are many more than 50 people in the Territory who smoke opium, as is shown by the fact that there were 95 convictions during the year for breaches of the Opium Ordinance, there is no doubt that the habit is becoming less prevalent and that there are few young men who indulge in it. Whether this result is due to restrictive legislation or to the great rise in the cost of opium is difficult to say. Thirty-eight opium-smokers were treated in gaol. All were men, and all were cured of the habit except one man who developed chronic diarrhœa, with swelling of his feet, and who was discharged on the recommendation of the medical officer. The treatment of opium-smokers in gaol is very simple. The drug is at once cut off, a purgative is administered, and the patient is either entirely relieved from work for a few days

or given work of a very light nature. The majority of the patients complain very little, but they usually look, and doubtless feel, dejected and miserable for four or five days. A few complain of diarrhœa, which is readily controlled by simple medicines. After the lapse of about a week the craving for opium ceases and the patient commences to gain weight. All patients on their discharge from gaol invariably look stronger, fatter, and more physically fit than when they were admitted to gaol.

The excessive use of alcohol is on the increase. Cases of drunkenness, which till recent years were very rare among the Chinese of this Territory, are now becoming more numerous, and the Chinese themselves say that this is due to the suppression of opium-smoking.

THE REVOLVER AGAIN.

THE lack of restriction attending the purchase and carrying of revolvers has been illustrated recently by a case tried at Chester Assizes by Mr. Justice Ridley, who sentenced to five years' penal servitude a clerk named Blowers for shooting and nearly killing a taxicab driver. Blowers was driven at his request along a country lane when he asked his victim whether he had ever been shot at. On receiving a negative answer he produced a revolver and put three bullets into the unfortunate chauffeur, who was able to escape but who, according to the medical evidence given at the trial, will never altogether recover from the effect of his wounds. The newspapers on the same day reported the suicide of Mr. Dundas Slater, well known in connexion with music-halls, who being apparently in a condition of pecuniary embarassment put an end to his life with a "cheap American revolver" or magazine pistol. Again on the same day, July 11th, the newspapers reported Mr. Ben Tillett—we hope incorrectly—as using these words in addressing workmen on strike—"Let us fight this out. We have behaved in a most exemplary manner and I want no bloodshed, but if 'blacklegs' use revolvers and clubs and jugs and other weapons I want you to use them and kill these ——. Fight them." Deadly weapons, as distinct from dangerous toys, are now purchasable at a cheaper rate than they were before the modern magazine pistol superseded the revolver, and if the ordinary physical violence associated with strike disputes is supplemented by the use of pistols on either side, or on both, it will be due to the reckless manner in which the sale and carrying of such weapons are allowed to continue.

GOVERNMENT INSTITUTIONS IN CEYLON.

ACCORDING to an official report just published there are in Ceylon 74 Government hospitals fully equipped with the most modern hospital furniture and surgical appliances. The number of beds in the hospitals ranges from 30 to 425. The new out-patients' department of the General Hospital, Colombo, will be completed shortly. In addition to the hospitals, there are 413 outdoor Government dispensaries and 256 estate dispensaries supported by the planters, who get their drugs free up to a value of 50 cents a coolie.

The Medical College is a flourishing institution with 161 medical and 82 apothecary students, these numbers showing an increase of 14 and 48 respectively as compared with the previous year. The full course of training for medical students is five years. A diploma in medicine, surgery, and midwifery (which can be registered in the United Kingdom) is granted to successful students. There are a bacteriological institute, with a small clinic for tropical medicine attached; a laboratory for the Government analyst, containing the most modern chemical apparatus; an ophthalmic hospital; a lying-in home; a women's hospital; a children's hospital; and special hospitals for the police and for convicts. The lunatic asylum is situated in Colombo, and is the only one in the island. There are 649 inmates. The leper asylum is situated about six miles from Colombo, and contains 376 patients. A small establishment for lepers also exists in the Eastern Province, where a large leper settlement is to be founded shortly. In association with Government, a home for incurables, containing 80 beds, is worked by a committee of Government officials and representatives of the public.

There are no poorhouses in Ceylon. In Colombo and some other towns there are friend-in-need societies, subsidised by Government, for the relief of distress. In addition to this, every Government agent has an annual vote for "allowance to paupers."

KEEPING SHOP.

A CORRESPONDENT, writing from South Africa, asks us whether it is in accordance with the Medical Act for a registered practitioner to keep an open shop as a druggist and to sell quack medicines. He points out, further, that the assistant in the practice to which he alludes is not even a registered pharmacist. Regrettably in some parts of our dependencies the rules that govern the action of members of the medical profession in Great Britain do not always hold good. Thus are tolerated in Canada and British colonies and in the United States of America many practices that in Great Britain would be considered reprehensible. On the other hand, it must not be forgotten that local necessities may rightly permit of certain things being done by medical men which would undoubtedly be improper in places where no such necessities exist. The keeping of an open druggists' shop by a registered medical practitioner may be pardonable in one place, while in another, and under different conditions, it would be highly reprehensible. The selling of quack remedies, however, under no circumstances can we consider right on the part of a medical man, even though he keep a shop as a matter of convenience to the locality. Such things are not necessaries and may be dangerous. A member of the medical profession should at least leave the public to make their own arrangements for quack doctoring if they will have it, and not aid and abet them in the practice by providing them with the means.

THE CHILDREN'S COUNTRY HOLIDAYS FUND.

THERE are always in London a large number of poor children to whom a holiday in the country is an imperative necessity, and this year the number has been increased on account of unhappy labour troubles. As Sir Thomas Boor Crosby, Lord Mayor of London, points out in an appeal on behalf of the Children's Country Holidays Fund, the Fund is endeavouring to send away at least 45,000 children for a fortnight's holiday in the homes of country cottagers, and every £1 sent to the honorary treasurer, the Earl of Arran, 18, Buckingham-street, Strand, W.C., ensures for two poor children a fortnight with kind country hosts. "Those who are hoping to take their own children away, and all who realise the recuperative and invigorating effect of the joy that such a holiday brings with it," will, Sir Thomas Crosby is confident, respond generously to this appeal.

Gorlas.—The legal position in the matter of the bond is not quite clear, and our correspondent would do well to consult a solicitor. But we feel sure that in the circumstances it would be considered a graceful act not to practise within a reasonable radius of the principal's centre.

Dr. J. R. O'Brien and Dr. H. M. Wilson are requested to send their addresses with their communications.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

A DIARY OF CONGRESSES.

WE shall publish this diary from time to time that our readers may have under their hands the dates of the approaching scientific Congresses. It is unnecessary to issue the lists of all these functions week by week, and we propose to make only such gatherings as will occur in the immediate future the subject of regular announcement. The following Congresses, Conferences, and Exhibitions are announced for July and August:—

May to October (London, Earl's Court).—Shakespeare's England.
July 19th–27th (Liverpool).—British Medical Association, Eightieth Annual Meeting.
,, 24th-30th (University of London).—First International Eugenics Congress.
,, 25th–28th (Berlin).—Royal Institute of Public Health.
,, 26th–31st (Prague).—Sixth International Congress of Radiology and Medical Electrology.
,, 29th–August 3rd (York).—Congress and Exhibition of the Royal Sanitary Institute.
,, 29th—August 3rd (The Hague).—Second International Moral Education Congress.
Aug. 5th–10th (Oxford).—Second International Congress of Entomology.
,, 6th–10th (Düsseldorf).—Third International Medical Congress on Industrial Accidents.
7th–10th (Glasgow University).—Thirty-second Annual Meeting of the British Dental Association.
,, 8th–30th (Central Europe).—Medical Study Tour ("A.P.M."), starting at Besançon.
,, 10th–14th (Edmonton and Calgary, Alberta).—Annual Meeting, Canadian Medical Association.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, July 17th, 1912.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
July 11	30·02	S.W.	...	123	76	61	61	65	Cloudy
,, 12	29·93	S.E.	...	135	88	62	67	72	Fine
,, 13	29·94	E.	...	120	82	66	65	70	Fine
,, 14	30·03	E.	...	121	88	63	66	71	Overcast
,, 15	30·12	S.E.	...	131	89	63	66	73	Fine
,, 16	30·12	E.	...	132	88	65	66	72	Fine
,, 17	30·05	N.E.	...	120	75	62	61	67	Fine

The following journals, magazines, &c., have been received.—Revue de Chirurgie, Journal of Anatomy and Physiology, Quarterly Journal of Experimental Physiology, Journal of Obstetrics and Gynæcology of the British Empire, International Journal of Surgery, South African Medical Record, Eugenics Review, Journal of State Medicine, Local Government Review, Journal of Tropical Medicine and Hygiene, Journal of Surgery, Interstate Medical Journal, La Clinique Ophthalmologique, Peru To-day, Indian Medical Record, Birmingham Medical Review.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.20 P.M., Mr. Dunn: Diseases of the Eye.

TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Diseases of the Eye. 2 P.M., Medical and Surgical Clinics. X Rays. Operations.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.

WEDNESDAY.—4 P.M., Dr. Young: Demonstration.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (22nd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.), Central London Throat and Ear (Minor 9 A.M., Major 2 P.M.).

TUESDAY (23rd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.), Royal National Orthopædic (9.30 A.M. and 4 P.M.).

WEDNESDAY (24th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental (2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (25th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological (2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal National Orthopædic (9 A.M. and 3.30 P.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and (2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

FRIDAY (26th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.) Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Royal National Orthopædic (3.30 P.M.), Soho-square (2 P.M.), Children, Gt. Ormond-street (9 A.M.), Aural, (2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

SATURDAY (27th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic (2 P.M.), Hospital operations are performed daily.

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MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. I. of 1912, which was completed with the issue of June 29th, were given in THE LANCET of July 6th.

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